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CONTENTS

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IN THIS ISSUE

TODAY is the day of the expert and specialist. Since the scope of modern government is so vast, we must work the expert into our political system, but only as he is permitted to remain aloof from the embarrassments of "practical politics," will public administration be able to provide an inviting career to competent persons and become in truth a profession of experts in administration, Dr. Harold W. Dodds, President of Princeton University says in the first article, "The Role of the Expert in Government: His Use and Abuse" in this issue of the *Quarterly*. Dr. Dodds was the guest speaker at the Fund's twenty-second annual dinner meeting.

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At the Fund's Twenty-Second Annual Conference, the Round Table on Population Problems had for its general topic Demographic Studies of Selected Areas of Rapid Growth. Four of the seven papers presented at that Round Table appear in this issue. The remaining three will be published in the October *Quarterly*, and reprints of the total series will eventually be bound together. All four of the population papers in this issue were prepared under the auspices of the Office of Population Research, Princeton University.

The initial paper of the series, "The Dynamics of Population in Japan," is co-authored by Dr. Irene B. Taeuber and Mr. Edwin G. Beal of the Office of Population Research and the Library of Congress, respectively. This paper discusses the trends of urbanization, mortality, and fertility in Japan, and considers the general problem of future population growth in relation to industrialization. The basic data for this analysis were obtained in large part from original Japanese sources.

Dealing with a country farther to the west, but still within the Asiatic sphere, the second paper is "Demographic Fact and Policy in India" by

Dr. Kingsley Davis. Although the data for India are less extensive than those for Japan, they are unusually good for such an economically retarded country, and give an insight into the demographic problems of the heavily peopled agricultural countries of the Orient. Dr. Davis discusses the density and growth of the Indian population, the trend in births and deaths, and the social factors affecting population change. He advances the hypothesis that the differential diffusion of western culture to India, with the continuance there of a semi-colonial economy, has tended to aggravate the population problem, and believes that population policy with reference to India should take this circumstance into account.

A new index of overpopulation relative to levels of living is presented by Dr. Wilbert E. Moore in the third paper, "Agricultural Population and Rural Economy in Eastern and Southern Europe." The author discusses the growth of rural population in the peasant economies, and notes the chief characteristics of the property systems and the levels of technological and economic organization. For the relief of agricultural poverty and overpopulation, the author doubts the effectiveness of either institutional or technological changes in agriculture alone. He suggests rather that a solution may be found in industrialization.

The fourth paper in the series is "Prospects for Population Growth in the Near East" by Dr. Ernest Jurkat. The area under consideration includes Turkey, Palestine, Iran, Iraq, Syria, Trans-Jordan, and Arabia. With the exception of Palestine, these countries provide little or no official data on birth and death rates. The preparation of this paper was preceded by long and tedious work on estimating vital rates and other determinants of population growth. These estimates, made in many instances by regression techniques, do not purport to be more than approximations. Nevertheless, the final results present a reasonable pattern and they suggest a heavy growth potential in this region. The region has oil and mineral wealth, but the development of these resources sufficient to accommodate the prospective growth of population will depend largely on the adaptability of the social organization to the new requirements.

THE ROLE OF THE EXPERT IN GOVERNMENT: HIS USE AND ABUSE

HAROLD W. DODDS, PH.D., LL.D.[1]

INTRODUCTION

TODAY is the day of the expert and the specialist. The jack-of-all-trades appropriate to a simple economy, has become an anachronism. Government by experts is slowly becoming the modern substitute for government by the gentry which prevailed in the United States until the time of Andrew Jackson.

Every schoolboy knows that the constitutional fathers believed in republican rather than democratic government. The Federalist Papers frankly asserted that the new government would be in the hands of the gentry, by the very process of nature. They could conceive of no other evolution. It was the peculiar contribution of America in colonial days that the way was open to a man of lowly origin to rise to the gentry class, but until he gained recognition as a gentleman he was not considered to be a member of the ruling class. Conversely, public office was more respected then than afterwards in our history. Down to about 1830 it was an honor to sit on the New York Board of Aldermen.

Andrew Jackson destroyed our inherited English tradition that public office was for those of prominent social position. In his first message to Congress he sounded the death knell of the philosophy that public office was the property of the aristocracy. For government by a socio-political class, which both here and in England was always characterized by a commendable degree of noblesse oblige, he frankly substituted the spoils system, under which future generations were to suffer severely. He justified his position as follows:

> "There are, perhaps, few men who can for any length of time enjoy office and power without being more or less under the influence of

[1] President, Princeton University.

> feelings unfavorable to the faithful discharge of their public duties. . . . The duties of all public officers are, or at least admit of being made, so plain and simple that men of intelligence may readily qualify themselves for its performance."

In these words Jackson drove right to the heart of the evils of bureaucracy. His mistake lay in his method of meeting the problem. His cure was the wholesale discharge of hundreds of office holders and replacing them with henchmen of his own political machine. For this reason his effort to democratize bureaucracy degraded and demoralized the public service. For administration by the elite, which was bound to die sooner or later in the United States, he substituted government by amateurs in administration but real professionals in winning elections.

The tragedy of Jackson's influence was that it discredited for one hundred years such matters as education, experience, or special fitness as prerequisites to administrative posts. Not until recent years have Americans begun to feel that native common sense alone does not qualify one to administer the highly professional or technical tasks of expanded governmental activity. We have long recognized the need for the specialist in private life; now we are just beginning to realize as well that in public administration intelligence must be specially trained and seasoned by experience. There is no need to labor this point before this audience.

It is well, however, to remember why Jackson was a popular success. It was not because his supporters were more efficient administrators of government than the class of gentry they displaced. On the contrary they were less fit, both in skill and in sense of public obligation. But the rank and file did not look upon the gentry as responsible and responsive and they wanted people of their own sort in government whom they felt they could trust to look after their interests. Instead of government by the elite doing what was good for the people the people preferred a government that would do what they, the people, wanted. It is still the essence of democracy

that government shall do what the people want, not what it thinks is good for them. Jackson's mistake was that in democratizing government he commercialized public office and discredited fitness and education as qualifications for public administrators.

Even today Americans exhibit a naive and imperfect idea as to the difference between an expert in government and an expert in a similar line of endeavor in private life. It does not follow that because a man is a good engineer he will be an efficient highway commissioner; that because he is a dependable doctor he will be a successful director of public health; or that because he is an eminent business man he will make a wise head of a government bureau. To be a real expert in public administration calls for talents and understanding beyond those of a private practitioner.

Excessive Claims for the Expert

Enthusiastic social planners of the collectivist school are prone to seize on an abstract concept of the expert and to exalt him and his fellows into a new priesthood. Anyone familiar with "new day" political literature can testify how heavily the advocates of the all-inclusive state rely on the skill of the expert to lift us out of our difficulties. Nor do they stop with mere expertise; they go farther and endow the expert with noble spiritual qualities which will protect him and us against low motives and selfish ambitions. Indeed the whole case for collectivism rests upon the assumption that experts working in the name of science will be able to perform miracles. This is one form of "Mother knows best" school of thought which does not belong in a democratic system.

This exaltation of the state and of the expert who is to officiate in its name was set forth not long ago by an English writer of great distinction in the following frank terms. He was defending the proposition that the state can know better than I what is for my good, and arrange matters to my advantage better than I can. His explanation is that the state is to be administered by "disinterested

experts." Modern life has become so complex, declares the writer to whom I am referring, that the average man is no longer competent to decide what is good for him, since he can't possibly have personal knowledge of the factors involved. We must accept the experts, he concludes, as men who do have such knowledge and it is they who must decide those issues which cannot be left to the "casual shifty tastes and desires" of individuals. It is curious that the author I have quoted should be at heart a sincere humanitarian with a long record of interest in the welfare of the common people. He would angrily deny that he is a fascist but his psychology nevertheless is fascist.

You will note that it is assumed that these decisions which are too involved for popular treatment will be made by "disinterested" experts. How the experts are to become and remain more "disinterested" than ordinary people is not made clear. It is true that adequate education and strict professional standards tend to develop a sense of duty and a commendable esprit de corps comparable to the noblesse oblige and willingness to sacrifice that were so prominent in the old German bureaucracy. But it is a shallow view which holds that you can kill off the Old Adam in a man by tagging him as an expert.

Reconciliation of Expertism and Democracy

It is not easy to reconcile expertism and democracy in government. Any theory of expertism sounds to the uninitiated as a new scheme of class government. It seems to conflict with the democratic assumption that inherently the multitude are right and that their opinion must prevail as against the decisions of the few. American tradition places great confidence in the good sense of the masses. This naturally, if wrongly, led to the conclusion that anyone with good sense and sound moral judgment was capable of filling our public offices. John Stuart Mill expressed it cynically when he said that anyone who was not fit to be hanged was fit for any office to which he can be elected. Jefferson expressed the American regard for the capacities of the multitude in more favorable terms.

"State a moral case to a plowman and a professor. The former will decide it as well, and often better than the latter, because he has not been led astray by artificial rules."

It is the glory of Americans that they have always insisted that they be governed by men like themselves, by officers who are officers solely by their appointment. There is no guarantee that the well-born have sounder judgment than the masses. But this principle must not be interpreted to mean that special training and fitness are not essential to public administrators.

The German Republic under the Weimar Constitution was unable to reconcile expertism with popular government. Before World War I the German bureaucracy was the admiration of many Americans. It was incorruptible and free from political spoils. Its administrative efficiency was great. Public office was not a "pitiful job but a holy office." But in its days of glory its true allegiance was not to the people but to the Crown. When the Weimar Constitution transferred final authority to the parliament and to a political cabinet a great change was wrought in the proud position of the bureaucracy. Its morale fell at once, and scandals, unthinkable in an earlier day, appeared. Many top-ranking civil servants could not make the transfer of allegiance which parliamentary government required. Holding that political responsibility and a nonpolitical career service could not live in the same house, they failed to support the Republic and in notable cases actually worked to undermine it. Thus they helped to pave the way for Hitler.

Had Americans been able to resolve earlier this seeming contradiction between popular control and expert government, the governmental measures taken to withstand the depression through the 1930's would have been infinitely more successful. As a nation we had not yet learned that the mere passage of a law with a strong preamble does not assure that the purposes of the preamble will be attained. In other words we still have to learn that no government "can legislate beyond the capacities of experienced administration

to execute." No so-called brain trust meets the specifications, because it lacks the seasoning and the intimate understanding of governmental processes which experience and an administrative tradition alone can supply. Neither does practical business or private professional experience fill the bill, for (as I have said) public administration presents unique problems on which business training itself may throw little light.

The Limitations of the Expert

Somehow we must work the expert into our political system. He must have enough independence and sufficiently broad powers to assure that his talents can produce results; but he must never be the final boss. His scope should be large, for it is folly to assume that the multitude, or any single individual, no matter how studious and intelligent, can have adequate knowledge of the myriad matters with which modern government deals. What can we expect the plain man to know, in any thorough manner on his own initiative, about a sewage disposal plant, or quarantine of contagious diseases, or the gold standard in a banking and currency system, or the regulation of railroads, or the taxation of mines and forests, to mention a random selection of some of the simplest problems. Informed public opinion is essential but there are many problems which not even a specialist can encompass within the space of one life-time. More and more will our public policy be influenced by experts; more and more will the problems on which we are called to vote be discovered by experts. Hereafter experts will be the instigators of many public questions. But this word cannot be final. We cannot trust them to make our basic decisions for us. Therefore they must be politically controlled.

The reasons are clear on a moment's thought. Officialdom shares with the rest of the population a predisposition to gather power unto itself. An official filled with a sense of the righteousness of his mission, transcending the moderating influence of public opinion,

is a threat to the liberties of the citizen. When the official is a trained expert he may require even greater watching than the politically-minded official, who instinctively keeps his ear to the ground.

Being an expert is apt to be heady wine. When combined with the power of government, it can become intoxicating spirits. The expert's fund of knowledge in his specialty exceeds that of ordinary laymen; and knowledge itself is power, and power is a constant temptation. It tends to destroy humility and to encourage a paternal attitude towards the inexpert. The danger is that the expert, filled with special knowledge, is apt to confuse his knowledge with social wisdom. His very concentration on a sector of human life tends to blind him to a consideration of all the circumstances. If his specialty is science he is particularly apt to ignore the imponderables in human nature and the existence of other human values outside the range of his concentration. His very fidelity to science leads him to think of people as statistics and not as persons. The well-known narrowing influence of specialization calls for overhead articulating minds. In the field of government only the opinion of people, expressed through their elected representatives, can compensate for the limitations of the expert.

I am not suggesting that the temptation of the expert in government to become a bureaucrat stamps him as a unique or depraved person. Of course he enjoys that sense of power that comes to any man who is disposing of the lives and welfare of others. In such circumstances it is easy to permit the end to justify the means. The more conscientious the expert, the more he may be inclined to reach for power. It is natural for the official, if he believes in himself as all good men do, to seek to expand his activities. Does a lawyer flee from litigation or does a doctor turn away from sickness? Do not both seek to realize themselves by enlarging the circle of their influence? Is it not natural and even desirable that experts in government should wish to do the same? But this does not mean that they are to be free to define the limits of their powers.

The Difficult Role of the Expert

No profession is competent to decide the problems arising from its relation to other groups and to society. It is only the opinion of the multitude that can settle such questions. Norman Angell has expressed this truth in the following vivid language:

> "Authority always tries to prevent this questioning of its premises by the unlearned. To the bishop it seems preposterous and an obvious menace to society and good morality that his conclusions in theology should be questioned by any bootblack. But experience has shown over and over again that the bishop is sure to go wrong unless his conclusions are questioned and checked by the bootblack; and that unless the bootblack has the liberty of so doing both will fall into the ditch."

Because the expert is incapable of making decisions for the people, he must always be subordinate to political masters. "A guest," said Aristotle, "will judge better of a feast than a cook." We shall always need the politician to tell the expert what the people want and to combat the expert's inclination to give them what he thinks is good for them. Any expert who is unwilling to accept this condition is unfitted for public office in a democracy. When he does accept this limitation and is willing with patience to await action until the layman is educated to it he will find that his influence can be very great. In a sense the expert must consider himself more an educator than a policeman. As John Witherspoon, the president of Princeton, insisted in the Continental Congress, when price-fixing legislation was under debate, there are some things that cannot be accomplished by human laws but "depend for their success upon inward inclination." The experts in government who get into trouble are often those who really do not believe that the inward inclination of the people should rule.

The responsibility of the expert is to persuade the elective representatives of the people (the expert's bosses) to accept the course which his expert knowledge leads him to believe is wise. The legislative body is that branch which reflects the lay mind, because no

matter how we abuse it, it is composed of people like ourselves. The expert's dealings in policy matters are to be confined to Congress, the state legislature, or the city council. But, on its part, Congress or a state legislature, or a city council weakens its position and the service which the expert can render when it occupies itself with the details of administration or attempts to exercise its function by detailed legislation. It is unfortunate that Congress has not been able to develop any satisfactory method of control over the administration. Congress is no more efficiently organized or adequately staffed for this function than it was when the power of the executive was but a mere embryo of its present hearty self. In comparison with the British Parliament, for example, it is sadly unable to secure and digest even the simple basic information from the executive departments that it needs to perform its great responsibilities. The proposal (which was recently revived in Washington) that Congress be enabled to call officials before it for questioning is a step in the right direction. The running fight in Washington between the administrative departments, of which we have heard so much these days, is no credit to either side, and would be unthinkable in any well-planned organization.

If the expert is to render the service of which he is capable, he must be free of detailed legislative prescriptions and petty political interference. He and his associates and subordinates must be protected in office against the play of sordid politics and the spoils system. In other words, he must not be hired and fired with each change in party ascendancy. Only as he is permitted to remain aloof from the embarrassments of "practical politics," will public administration be able to provide an inviting career to competent persons and to become in truth a profession of experts in administration.

The price he will have to pay for tenure and freedom in his proper sphere is abstention from the drama of the political game. That sport he must leave to the party politicians. If he is unwilling to take a vow of political chastity, he cannot claim exemption from the haz-

ards and fortunes of political warfare. Of equal significance is the impairment of his standing and influence as an expert which occurs when he injects himself into politics. He just cannot work both sides of the street. It may be difficult for him to abstain from politics when the prevailing conventions of political life do not compel him to do so, and when the temptation is great to carry his program direct to the people over the heads of Congress or the state legislature; but abstain he must if he expects his place as an expert to protect him in the proper utilization of his expert capacities. His future lies in denying himself the pleasures of playing politics while being able to influence politicians and work in harmony with them.

That the administrator should be politically responsible and yet remain aloof from politics may seem to be both illogical and contrary to human nature. But the British Civil Service has achieved this delicate balance to the vast improvement of the public service. I suggest that in America also the expert can establish himself, qua expert, in no other way. Only by remaining outside the party struggles can he expect his expert talents to be respected as such and his tenure and influence assured. His future depends upon his being able to work in harmony with the political controls of the day. There is no other way in which he can achieve lasting results in a democracy. It is surprising and gratifying to observe how far the political representatives will follow the expert who takes pains to cultivate an "inward inclination" in them.

The Need for Special Training of the Expert in Government

There is time merely to refer to the fact, at which I have already hinted, that governmental administration is a unique profession in itself different from the private administration of corresponding activities. There are compelling reasons for this into which I shall not enter. America is still assuming that success in business or eminence as a college professor equips one to be a public administrator in a democracy. A moment's reflection suggests that this assumption

is not correct. We need more courses in public administration in our colleges and professional schools to acquaint prospective governmental experts with the problems peculiar to government and to teach them their rights and duties as public officers. We need stronger and more comprehensive codes of professional conduct than we yet have.

The scope of the expert in government is not confined to that of a consulting scientist or laboratory worker. Many are administrators as well, and a grasp of the art of administration is important in addition to strictly professional knowledge. Public administration is a job in itself quite apart from the professional expertise involved in it, and the talents of the specialist often do not include a gift for it. Brooks Adams defined administration as "the capacity of coordinating many, and often conflicting, energies in a single organism, so adroitly that they shall operate as a unity. This presupposes a power of recognizing a series of relations between numerous social interests, with all of which no man can be intimately acquainted . . . it is possibly the highest faculty of the human mind."

This definition raises the art of administration out of the low estate to which scholars are wont to consign it. Whether or not you agree with Adams that it is "the highest faculty of the human mind," it still is indispensable if the findings of science are to be made effective through government. America has been even more reluctant to recognize the need for the education of its officers in public administration than in the science or techniques which government utilizes. The solution would appear to be in part a greater recognition of studies in public administration in the universities which prepare engineers and scientists for government posts.

Concentration of Power in the Administration

The significance of what I have been saying about the attitudes and accountability of the expert in a democracy becomes clear when we remember the vast powers of legislation and adjudication which

the executive branch of government now possesses and will continue to exercise, doubtless in increasing measure. The constitutional fathers, fearful of the power of government, put their trust in the three-fold separation of powers between the executive, legislative, and judicial departments. Woodrow Wilson correctly showed how this theory of off-setting forces, if actually realized, would keep government on dead center and thus devitalize it when action was called for. As the sphere of government was enlarged and made more positive, a device, new to our experience, was introduced, viz., the administrative agency into which was telescoped all three departments. Thus we find administrative agencies today declaring legislation and adjudicating cases, functions which were once conceived to belong exclusively to the legislative and judicial branches.

In earlier days when the doctrine of separation of powers prevailed, the enforcement of law was in large measure left to the instigation of citizens themselves, who originated action by bringing cases to the courts. The executive department did not get in motion until the courts had acted. Thus the law would prescribe what constituted a health nuisance or a dangerous building, but the administration did not act to abate it until an aggrieved individual instituted proceedings in court against the offender, and the court rendered its verdict. Then, and not until then, the executive branch took action in accordance with the court's determination.

Today all this is changed. Congress and state legislatures now rely on the administrative agencies and not the courts to carry out regulatory acts. The modern administrative machine does not wait for an aggrieved citizen to set it in motion. No, the officials or commission act on their own motion. The regulatory commission is prosecutor, judge, and jury. Its function is not to umpire between parties to a controversy, but to enforce a political policy (often loosely prescribed by the legislature) i.e., to get a job done. Consequently we find the rights of individuals being determined by administrative agencies which originate the cases they adjudicate.

But the administrative process does not stop with adjudication. In large part it makes the law which it adjudicates by promulgating regulations with the force of law; thousands of them in the last decade.

The earlier procedure emphasized liberty; today's practice emphasizes getting results through government.

It is not necessary to dwell on the reasons for this development, which are familiar. A generation ago we concluded that we could not afford to wait until an aggrieved citizen began proceedings against a public health menace; it was too much like locking the stable door after the horse was stolen. Today government participation has gone farther than mere regulation of what a man can do with his business or property; it has now broadened from control to positive provisions of the means of prosperity.

This newer administrative process is still pretty raw. Its temptation to disregard the historic protective procedure which grew up in the courts as a defense against personal government still shocks many lawyers. Too often its methods have been secretive. Its tendency to apply a sort of "station house justice" by denying adequate hearings to parties in interest has not inspired confidence. Its concentration on the promotion of social policies has led to forced interpretation of legislation beyond what the legislature intended. Being a part of the administration, the findings of an agency must in general conform to the administration's policy. But too much preoccupation with results to the disregard of means shades off into the philosophy of "reason of state" over-riding private rights, which in earlier days was praised by Machiavelli and invoked by all who sought to be absolute monarchs, and which perhaps reached its zenith in the Nazi doctrine, which guides the German courts, to the effect that the welfare of the party transcends all other law.

Despite its dangers to liberty, government by administrative officers is here to stay. Indeed we may anticipate more rather than less over the sweep of the years ahead. It must be worked into our

traditional system of rights and liberty. If we go back far enough in English history we find that the same tendencies which attend the new field of administrative law afflicted the courts. But they worked out of them in time, and so must our modern administrative agencies.

The "Inward Responsiveness" of the Expert

I have been stressing the principle that external political controls over the administration must keep pace with the enlarged powers of these agencies. But external controls by Congress and the voters alone will not suffice, essential though they be. We must develop, as we have done in the case of our judges, professional habits and traditions of orderly standards of justice in the application of social policy, to which our officials will habitually conform. "This form of responsiveness," writes one learned author, "is too fragile for formal procedures; it may be embodied in part in codes of ethics or ethical norms; but it lies deep in the spirit of the public service as a social organism. . . . It is reflected in courtesy, in attentiveness, in cooperation . . . in equity, in the judicial mind, but also in the impartial and certain administration of the law and rule." These words express a high goal of achievement; but nothing less will serve. It is a delicate balance which we must achieve between justice and getting the job done. It can be attained only as we accept the expert as indispensable; as we as a people come to understand his proper powers, on the one hand, and his necessary limitations, on the other; and finally as we build a professional career for him in government and as our universities assume heavier responsibilities for his education.

Today the historic issue of personal government versus administrative absolutism is recurring. That those who tend to be absolutists may be honest humanitarians is no plea in abatement. James I was honest in his belief in his divine right to rule and the social advantages thereof.

In an address a few years ago Vice-President Wallace asserted that we have over-emphasized political democracy or Bill of Rights democracy. To this I take sharp exception. All history proves that if political liberties disappear all liberty is lost. It is folly to talk about economic or social democracy devoid of political freedom.

The issues I have described will be resolved. Despite alarmists, democracy, although always on trial, is not on the defensive in America. Our tradition, which takes Magna Charta for its symbol and the Bill of Rights as its formal expression, will unite with our political maturity and experience in self-government to see us through.

What I have said places heavy responsibilities on private groups and associations in regard to public education. It consigns the expert who works for government to administration and to advice and persuasion in respect to his political superiors. It restricts his scope as a propagandist and a participant in the formulation of political policy. It denies him the fun of practical politics.

The governmental expert's preoccupation with administration will leave him little time for scientific research. In the future, as in the past, original research and popular education for the acceptance of the discoveries of research must be the responsibility of private citizens and associations. Democracy can never afford to surrender to government these creative functions. No government by experts can take the place of the nonpolitical, nongovernmental associations such as the Milbank Memorial Fund. For almost a quarter of a century the Fund has served with eminent and unique success to promote the welfare of mankind. It will continue in its calling. The more expert government becomes the greater will be its opportunity.

THE DYNAMICS OF POPULATION IN JAPAN

A PRELIMINARY REPORT

IRENE B. TAEUBER[1] AND EDWIN G. BEAL[2]

THE gradual industrialization of the great agrarian regions of southern and eastern Asia is probably inevitable. The economic and political problems involved in implementing plans for the maintenance of peace and for lessening the poverty of the peasant masses through assisted industrialization are probably the most difficult ones facing the statesmen of this generation. The relation of population factors to these economic and political problems is not remote and involved, but very direct and fundamentally very simple. Can the industrial and agricultural development of the overcrowded regions of India, Java, or China occur rapidly enough to provide even subsistence for the vastly increased populations that will be produced by the limitation of deaths which the industrial and political reformation will bring? The problem is even deeper for some areas. Are the cultural inertias and the lack of individual vitality produced by the extreme pressure of people on the land so great as to prevent any orderly development toward an economic organization that could lessen the extent of the ignorance and the poverty?

The population problems of Asia would not be avoided by acquiescence in the maintenance of subsistence agrarian economies. Rapid acceleration of population growth has followed the introduction of order, rudimentary sanitation, epidemic controls, famine relief, and agricultural improvements, not only under the comparatively benevolent and humanitarian rule that existed in India, Java, and the Philippines, but also under the system of exploitation imposed on Formosa and Korea by the Japanese. The rapid population growth produced by the reduction of mortality in a cultural milieu in which reproduction occurs at or near a physiological maximum

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[2] Chief Assistant in Japanese, Division of Orientalia, Library of Congress.

creates a precarious balance between people and subsistence. Malthusian controls may be pushed into the future, but the recent famines in India and China make it quite apparent that the ultimate controls to population growth in these pre-industrial societies remain famine and disease.

Escape from the population dilemma that now characterizes southern and eastern Asia requires increased industrial and agricultural productivity, but no possible increases can result in permanent amelioration of living conditions unless the rate of population growth can be controlled. In fact, the rate of increase may accelerate for a considerable period of time if the richer and technically more advanced countries of the West cooperate in the industrialization of the East. More efficient administration, more rapid increases of the food supply, and more adequate health and sanitation programs may produce accelerated declines in mortality. If fertility does not decline, or fails to decline rapidly enough, these decreases in mortality may prove only temporary. Realistic discussion of the problems of population growth in relation to industrialization thus necessitates an analysis of the extent of and the chronological relationships between the declines in mortality and fertility that will accompany the economic transformation of southern and eastern Asia. It would be hazardous to assume that the patterns of declining mortality and fertility that have characterized the diffusing culture of the West would also characterize the industrializing cultures of the East. Perhaps the demographic correlates of industrialization are universal effects, independent of the differences in patterns of behavior and values in the indigenous cultures; perhaps they are not. Only the history which is yet to occur in Asia itself can give a definitive answer to this question, but clues to the answer may be secured from the population history of Japan, the one non-European nation that has achieved an industrial and an urban economy.

Analysis of the dynamics of population in Japan has implications for a variety of problems other than those of the possible future

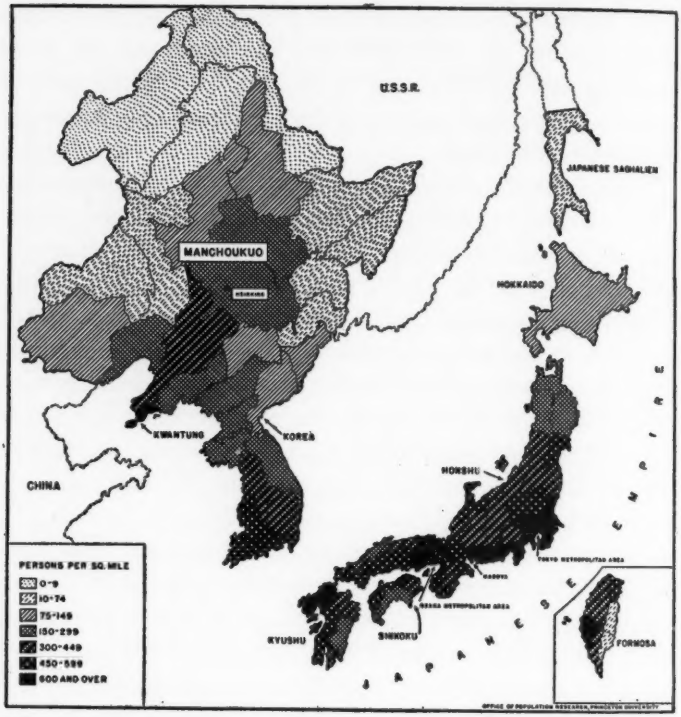


Fig. 1. Density of population in the Japanese Empire and Manchoukuo, Census of 1940.

trends in fertility and mortality on the Asiatic mainland or the islands of the South Pacific. The traditional picture of Japan which has been presented to the West is that of a grossly overpopulated island kingdom whose people must find job opportunities abroad, either by peaceful means or by conquest. This picture is buttressed by the citation of figures on population growth or population density, the latter measured by dividing total population by either total or cultivated land area. (Figure 1.) Many Japanese and Western students have concluded that the direct pressure of population on physical resources created the expansionist policies that led to war.

The accuracy of this analysis may be tested factually by two types of inquiry. First, what were the interrelationships between trends in fertility, mortality, urbanization, and economic structure? Second, what was the correlation between political ideology, military action, and the underlying population trends? It is obvious that Japanese experience cannot give definite answers to the problems of the interrelationships of population trends, cultural diversities, and political instability, but Japan constitutes the one non-European nation with statistical records adequate for fairly careful analysis.

The third and most obvious of the problems that can be approached through an analysis of Japanese population statistics is that of the future of the Japanese population itself. The era of Japanese history that began with the Meiji Restoration of 1868 will end with the capitulation, but the post-war culture will evolve in some way from that of the pre-war period. If the population losses of the war should prove to be no greater than those of the major belligerents of the First World War, then the nature of the demographic and resources situation of Japan will impose definite limitations on the type of policies that can be adopted if the Japanese are not to face physical decimation in the post-war period. The population trends and the correlated ideologies of the pre-war period have definite relevance to the plans of those who hope to avoid an Asiatic repetition of the history of post-Versailles Germany.

The following sections will present some preliminary materials from a larger study of population in Japan and her pre-war Empire. Some of the more important data known to have been published either by the scholars of Japan or by the Japanese Bureau of Statistics have not yet been located. The validation and the analysis of the available materials are incomplete. Hence the facts, the interpretations, and the hypotheses are tentative.

The Population History of Japan

Japan's early history is broadly similar to that of England, with whom she is often compared. As an island region off the coast of

Asia, she received and assimilated successive waves of migrants and of culture from the mainland. She gradually became a great trading and colonizing power, with settlements scattered from the Philippines to Malaya. In the early seventeenth century, through a combination of factors, the most important of which was the fear of the influence of the Christian missionaries, Japan entered a period of 268 years of relative seclusion.[3] Christianity was eradicated, shipping and trade barred, and the country ruled by absolute despotism. Peace and internal order replaced the warfare and the civil disorders that had characterized previous centuries. Agricultural productivity increased, the area of settlement expanded, and the population increased rapidly.

By the early eighteenth century the balance between people and rice had become so precarious that continuing population growth for any considerable period of time was impossible. From the first of the Tokugawa census counts in 1721 to the last in 1850, the population remained relatively constant, fluctuating between twenty-eight and thirty millions.[4] This remarkable stability in total numbers did not represent a successful adjustment between people and their resources base. Rather, it was a precarious balance between the food-

[3] For the history of the Tokugawa period, *see:* Honjô, Eijirô: The Population and Its Problems in the Tokugawa Era. *Bulletin de l'Institut international de statistique,* 1931, 25, No. 2, pp. 60-82. Tokyo, 1931.

The most careful study of the population of the Tokugawa period is said to be Eijirô Honjô's *Jinkô oyobi jinkô mondai* [Population and Population Problems]. Tokyo, Nihon hyôron-sha, 1930. This study itself has not been located, but summary data and interpretations from it are given in an appendix on "The Population of Japan, with Special Reference to Its Abnormal Character during the Seclusion Period of the Tokugawa Shogunate," in: Kuno, Yoshi S: Japanese Expansion on the Asiatic Continent. Vol. II. Berkeley, University of California Press, 1940, xii, 416 pp.

For a critique of the statistics of both the Tokugawa and the modern precensal period, *see:* Frumkin, Grzegorz: Japan's Demographic Expansion in the Light of Statistical Analysis. *Sociological Review,* January, 1938, 30, No. 1, pp. 1-28.

[4] These so-called censuses were only crude approximations to a count of the total population. The temple priests or the *mura* headmen reported the number of people and houses included in the register books (the *koseki* or *nimbetsu-chô*) and specified the increase or decrease since the last examination. The period of examination extended over several months. The court nobles, the samurai and their subordinates, and the Eta and the Hinin were excluded. Those below fifteen years of age usually could be counted or omitted at the option of the *daimyô* or governor of the district. Persons not listed in the registers of domicile were automatically excluded. The local limits were changed often. In addition, some areas failed to make returns.

producing potentialities of an inefficient and exploitative agrarian regime and a population growth checked only partially by the practices of infanticide and abortion. Historical chronicles substantiate the indications from the census counts that the pattern of mortality in Japan prior to the last half of the nineteenth century was similar to that of medieval Europe, or that of the isolated regions of contemporary China. The ultimate controls to growth were famine and epidemics, just as in other nonindustrial areas of the world.[8] Even abortion and infanticide appear to have been techniques that flourished after the great calamities, not techniques consciously adopted in advance to forestall the calamities. They may have prevented the famines and the plagues from occurring more frequently, or with even more devastating effects, but they were not in themselves successful techniques for controlling population growth.

The economic and the demographic problems of the period of seclusion became ever more acute, with the growth of parasitic cities, the desertion of the countryside, and the decline in food production. An industrial and commercial class was gradually evolving, threatening the power of the shogunate. Then came the opening to the West, followed by the Meiji Restoration of 1868. A feudal agrarian regime was transformed into an industrial state through governmental direction and stimulation.

The evaluation of the effects of the long period of seclusion and the maintenance of a stable population during the period of the explosive political and demographic expansion of the West must remain in the realm of conjecture. Perhaps the decision for seclusion prevented Japan from securing that hegemony over the Asiatic mainland that would have resulted from the continuation of her

[8] A careful study of the surviving records for several areas indicates a recorded birth rate of between 20 and 30 per 1,000 population. The population stagnation in these areas was due to a normally high death rate, plus catastrophic rises in famine periods. *See:* Sekiyama, Naotarô: Tokugawa jidai no shussei-ritsu-sono jakkan no jirei. [Birth and Death Rates in the Tokugawa Period—Some Examples]. *Jinkô mondai kenkyû* [*Studies in Population Problems*], June, 1940, 1, No. 3, pp. 32-43.

early policies of trade, colonization, and conquest. In this view, Japan's present population difficulties are due primarily to her seclusion during the period when the Western powers were building their empires. But it is equally possible to argue that Japan was able to unify her own culture and to avoid conquest by the West only through her policy of seclusion. It is significant to note that seclusion was adopted, not for its own sake but as the only feasible means of eliminating those proselyting activities of the Christian missionaries and traders that threatened the very existence of the feudal lords and the imperial family. Be that as it may, the Tokugawa period gave to modern Japan the tradition of population control and the small family system, plus folk memories of abortion and infanticide as acceptable controls to family size. Even more, it consolidated the political-economic system and unified the cultural values that have been the major barriers to the diffusion of Western patterns of fertility and mortality control.

The precise trends of population growth and distribution in the period from 1869 to 1920 are and probably will remain subject to great controversy. An attempt was made to secure all the needed population and vital statistics through the elaboration and centralization of a registration system, which covered not only Japanese in Japan but all Japanese wherever they might be. The usual difficulties were encountered.[6]

Whether the impact of the industry and culture of the West actually was accompanied by an increase in both birth and death rates, or whether the officially accepted increases are merely artifacts of the statistical system, has been a subject of considerable discussion in the Western literature on the Japanese population situation. The consensus of modern opinion is that the apparent increase in mortality was produced by more complete registration of deaths, and that if fertility increased it was an increase of recorded live births,

[6] For a summary of these difficulties, and citations to Japanese sources, *see*, Ch. IV in Ishii, Ryôichi: Population Pressure and Economic Life in Japan. Chicago, University of Chicago Press, 1937, xvi, 259 pp.

not an increase of conceptions. To the Japanese, the answer is simple. Official statistics are usually accepted as inviolate. The problem is not their validity but their interpretation. In this case, there is an obvious interpretation compatible with traditional Japanese thought. The increase in deaths is the natural effect of urbanization and contact with the communicable diseases of the West, while the increase in fertility represents a biological rejuvenation. The increase in the rate of national population growth proves at once the vitality of the Japanese people and the rightness of the Japanese system. Both Western students and the Japanese agree that, whatever the interpretation of trends in births and deaths taken separately, there was a great spurt in population growth. The population which had remained at approximately thirty millions in the hundred and fifty years between the first of the Tokugawa counts and the opening to the West doubled in the fifty years between 1870 and 1920.[7] The question is the dynamic process by which this growth was accomplished, not the fact of the growth itself.

Fairly accurate and moderately extensive population and vital statistics for Japan are available only for the two decades between 1920 and 1940. Even here there are difficulties, since the suppression of significant data is apparent in 1935 and well advanced by 1938. Complete national censuses were taken in 1920 and 1930, including not only the number and distribution of the population and the usual demographic characteristics but also data on occupational and industrial composition and place of birth. Quinquennial censuses taken in 1925 and 1935 were simplified censuses, including only population, place of residence, sex, age, marital status, and racial origin, although the latter were not tabulated for empire nationals

[7] Careful statistical tests reveal both the rather remarkable accuracy of the enumeration in the censuses of 1920 to 1935 and the extent and nature of the inaccuracies in the registration "censuses" that were made every five years up to and including 1918. The results of these tests will be published later. It is interesting to note that the discrepancies between the age distributions of the 1918 registration "census" and the 1920 enumeration census are precisely those to be expected on the basis of European experiences with registration systems.

in any meaningful way.[8] The census of 1940 was a complete census, but the only material known to have been published is the geographical distribution, by sex.[9] In addition, the censuses of 1920 through 1935 were *de facto* censuses of persons resident in Japan, while that of 1940 included "military personnel in active service, mobilized personnel . . . and those who, being outside the territorial limits of the Empire, have gone to the front as civilian employees in the military service, as members of the information service, as Shinto ritualists, Shinto priests, and religionists."[10]

Detailed vital statistics were published in yearbooks on vital statistics and causes of death, while summary tabulations were included in the statistical yearbook of the Empire of Japan.[11] The publication of most official vital statistics for both Japan and the Empire was suspended at the end of 1938. Thus for the period from 1920 to 1940 there were difficulties with and deficiencies in the basic statistical data, but this material permits much more intensive and controlled analysis than is possible for any other period of Japanese history, or for any other region of southern and eastern Asia at any time.

The rate of increase of the Japanese population during the censal period has been rapid. The total population increased from 55,963 thousand in 1920 to 73,114 thousand in 1940, an increase of 31 per cent in twenty years. The intercensal increase was 6.7 per cent in 1920-1925, 7.9 per cent in 1925-1930, 7.5 per cent in 1930-1935, and 5.6 per cent in 1935-1940.[12] The absolute increase reached a maxi-

[8] Nihon. Naikaku tôkei-kyoku [Cabinet Bureau of Statistics]: *Kokusei chôsa hôkoku* [CENSUS REPORTS], 1920, 1925, 1930, and 1935.

[9] Nihon. Naikaku: *Hôrei zensho* [*Monthly Record of Legislation*], April, 1941, pp. 559-653.

[10] Translated from the instructions on the back of the census schedule, as reproduced in: Nihon. Naikaku [Cabinet]: *Genkô hôrei shûran* [Complete Collection of Laws in Force], Section 6, Sub-section 4: Kokusei chôsa [THE NATIONAL CENSUS], December 15, 1940, pp. 241/1-242/2.

[11] Nihon. Naikaku tôkei-kyoku [Cabinet Bureau of Statistics]: *Jinkô dôtai tôkei* [VITAL STATISTICS]. *Shiin tôkei* [STATISTICS OF CAUSES OF DEATH]. *Nihon teikoku tôkei nenkan* [STATISTICAL ANNUAL OF THE JAPANESE EMPIRE].

[12] The actual increase between 1935 and 1940 was even less, since the 1940 census was more inclusive than that of 1935.

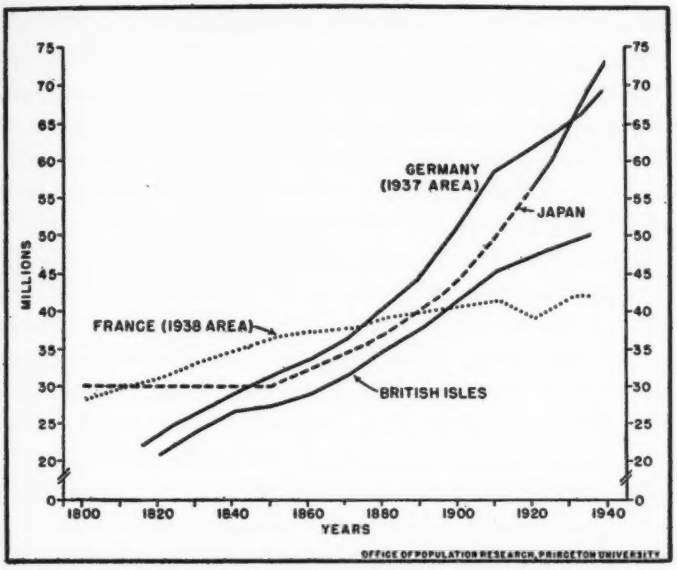


Fig. 2. Population trends in Japan and selected European countries, 1800-1940.

mum of 4.8 millions between 1930 and 1935, and then declined to 3.9 millions during the war period from 1935 to 1940.

The changes during the recent twenty-year period do not answer the question as to whether the over-all trends in growth in Japan have been typical of those of western nations. Consequently, Figure 2 presents a comparison of population trends in Japan and certain western countries between 1800 and 1940. The trends in the various countries are dissimilar in their timing, and they differ in detail, but all represent similar reactions of populations to economic and cultural changes. Japan's period of what might be termed Malthusian stability lasted until 1850, but if the curves for the other countries could have been pushed back into the Middle Ages, similar long periods of a relative balance of births and deaths would have been found. Late and rapid industrialization produced a steep acceleration in the rate of growth of Imperial Germany, just as it did at a

later period in Japan. The deceleration in the rate of growth that became apparent in Japan a decade ago occurred earlier in the other countries as the momentum of growth produced by declining mortality was braked by declining fertility.[28]

The similarities in the broad population trends in Japan and the other industrializing nations should not be overemphasized to the neglect of the fundamental differences. The long period of seclusion during the Tokugawa regime with its balancing of rice and people left a far different heritage to Japan than did medieval Christianity to Europe. Neither is the pattern of industrialization and urbanization in modern Japan comparable to that which followed or accompanied the development of the Renaissance, the Reformation, and the capitalistic economies in the West. In Japan, the industrialization was superimposed on a culture whose dominant values were in many ways antithetical to the individualization of value systems and behavior patterns which has been so characteristic of the urban culture of the West. The industrialization of Japan was also accompanied by the maintenance of low levels of living, long hours of work, and the diversion of those surpluses that might have mitigated living and working conditions to the nonproductive uses of Empire and of War.

The Urbanization of the Population Structure

The growth of the total population is a gross figure produced by changing levels of fertility, mortality, and migration. It reveals little as to the real population problem of a country, which is not population growth or decline *per se* but the present and potential future relationship between people and the number and types of job opportunities available to them. The actual measurement of this relationship within Japan will not be attempted in the present paper.

[28] Detailed comparisons of rates of change at given time periods or at comparable historical stages are hazardous because of the known inaccuracies in the population counts or estimates, not only for Japan but also for the countries of Europe. However, the range of error in the early estimates, even in the case of Japan, is not sufficient to alter the essential validity of the main conclusions.

Rather, it will be approached indirectly through a study of the urbanization of the country on the assumptions that residence in urban areas represents dependence on sources other than agriculture for a livelihood, and that migration from one type of area to another within a country tends to represent the attractive force of superior economic opportunities.

The analysis of internal migration in Japan is difficult because of the paucity of statistics. The population gainfully occupied in or dependent on agriculture is known at only two time periods, 1920 and 1930.[34] Information on rural and urban populations is available for each census period, and there are yearly estimates of change, but the urban population is defined as that resident in incorporated areas *(shi)*. Most *shi* have populations of 30,000 or more, but some urban places of 30,000 or more are not incorporated as *shi*. Both the 1920 and the 1930 censuses secured information on place of birth, and this permits a considerable but definitely limited analysis of the historic processes of internal migration. The registration system is still maintained, but no current migration statistics based on it have been located. Hence indirect techniques must be utilized.

The population residing in places of 10,000 or less may be taken as equivalent to the rural population of Japan.[35] The percentage of the total population residing in such rural places decreased from 67.7 per cent in 1920 to 54.1 per cent in 1935, and was still lower in 1940, although the precise figure is not yet available. The extent of the decrease varied widely from prefecture to prefecture, but in no one of the 47 prefectures was the proportion of the total population resident in rural places greater in 1935 than in 1920. Even more significant, however, is the fact that, for all Japan, relative stability in total numbers characterized not only the agricultural population *per se*, but also the population living in rural areas as defined here.

[34] Precensal estimates are available, but they are not valid for detailed analysis.

[35] The Japanese define the rural population to include all people not resident in places incorporated as *shi*. However, it is more in accord with both Western usage and the realities of the situation in Japan to utilize the Japanese statistics on size of place and define rural as all places of less than 10,000 population. *See:* Ishii, Ryôichi: *Op. cit.* pp. 69-73.

The number of persons resident in places of 10,000 or less was 37.9 millions in 1920, 37.5 millions in 1935. The entire natural increase of the high fertility rural areas had been absorbed in urban areas, either directly through migration or indirectly through the growth and incorporation of previously rural areas.

There were wide regional differentials in the relative decline of the rural population. Actual increases occurred in the majority of the poor and backward prefectures of northeast Japan, while the depopulation of the countryside was in process around the large metropolitan centers and in the more advanced and prosperous agricultural areas of the southwest. In Japan, as in the United States, rural-urban migration appears to be heaviest from the agricultural regions which themselves offer superior economic opportunities. The pile-up on the land occurs in isolated and poor areas characterized by subsistence rather than commercial agriculture.

The changes in the places of ten thousand and over reflect an ever greater absolute and relative concentration in the more densely settled areas, with some irregularities in the patterns of change as increasing populations push communities into larger and larger size classes. The trend toward urbanization is most clearly reflected in the growth of cities of 100,000 and over. These cities contained 12.1 per cent of the total population in 1920, 14.6 in 1925, 17.5 in 1930, 25.3 in 1935, and 29.1 per cent in 1940. This rapid urbanization has been concentrated in a fairly small portion of Japan, the central region. The prefectures containing the great cities of Tokyo, Osaka, Yokohama, Nagoya, Kyoto, and Kobe contained 13.3 million people in 1920, 22.5 million in 1940. The rate of increase of the largest cities was less between 1935 and 1940 than it had been in the earlier intercensal periods, while many smaller cities and the suburban areas of the great cities grew at more rapid rates. The detailed pattern of urban growth between 1935 and 1940 reflected the effects of the economic and military preparations for the war in process and the war that was to come.

Population changes that have accompanied the industrialization of Japan have been similar in broad outline to those that occurred in Occidental nations undergoing similar transformations. The process has been greatly accelerated; the relative growth of cities of 100,000 and over in Japan between 1920 and 1935 was practically as great as that which occurred in the United States between 1900 and 1940. Rural areas, villages, and even towns of up to 30,000 population have either lost population or barely maintained their numbers. The population remaining within prefectures has been redistributed, rural areas remaining stable or changing slowly, cities increasing rapidly. Moreover, the vast majority of the prefectures have contributed appreciable proportions of their natural increase to the expanding metropolitan centers of Tokyo, Yokohama, Osaka, Nagoya, Kobe, and Kyoto, and to a lesser extent the cities of Fukuoka and the developing industrial region of the southwest.[28]

The demographic significance of the urbanization of the Japanese population is apparent to all students of population in the industrializing areas of the West, where the changed conditions of living and working have been accompanied by reductions in both mortality and fertility. A preliminary analysis of the extent to which the accelerated urbanization of Japan has had similar effects will be presented in the final sections of this report.

The implications of the urbanization of the Japanese population for the interpretation of the problems of Japan and the analysis of the relevance of Japanese experience to the probable future of Asiatic countries can only be mentioned here. Japan has maintained approximately a stable ratio of rural population to cultivated or cultivable land. Except in limited areas, the vast increase in population has not been accompanied by the increasing pressure of a rapidly growing agricultural population on the land. Rather, there have been alternative opportunities in the industry, commerce,

[28] For a more detailed note on internal migration and population redistribution in Japan, *see: Population Index*, April, 1943, 9, No. 2, pp. 73-77.

trade, transportation, service industries, and professions of the cities. Whether or not the entire natural increase of the vast agrarian regions of the Asiatic mainland or the Netherlands Indies can be channeled into the cities and nonagricultural employment is a problem for separate analysis. If this is not possible, then it is quite apparent that the declines in mortality and fertility which accompany industrialization will differ in both extent and timing from those that have occurred in Japan.

Trends in Mortality

The problem of the changes in death rates during the period of industrialization is so basic to the interpretation of the demographic correlates of the transition away from the Tokugawa system that it merits careful analysis. The official reports indicate that the crude death rate increased irregularly from 20.7 in 1886-1890 to 23.6 in 1916-1920, and then declined to 21.9 in 1921-1925, 19.4 in 1925-1930, and 17.9 in 1931-1935. Although the official Japanese reports attribute the early increase in mortality to the spread in infectious diseases which came with the opening to the West, it seems probable that the increase is due primarily to more complete reporting. Recorded rates for infant mortality increased fairly consistently from 116 per 1,000 live births in 1886-1890 to 174 in 1916-1920, and then declined to 121 in 1931-1935.

Analysis of the life tables for the precensal and censal periods corroborates the theory that the increase in death rates with urbanization and industrialization was spurious. Life-table death rates increased at practically all ages between 1908-1913 and 1921-1925, but the 1908-1913 age-specific rates were computed on the basis of a registration "census" that was between one and two million too high in total population, while the 1921-1925 tables were based on census enumerations that bear internal evidence of being quite accurate. If the comparison is made between the life tables of 1899-1903 and 1908-1913, both of which were based on age distributions

of registered populations, the conclusion is quite different. The mortality in 1908-1913 was higher than that in 1899-1903 at only two periods of life, ages 0 and 1, and ages 15 and 20. At all other ages it decreased. This is the pattern one would expect if the registration of infant deaths were still incomplete but improving, and if, as was the case, the major difficulty with the registration system was the failure to remove young migrants from the registration records in the rural areas from which they came.

The period of conjecture as to the trends in the mortality of Japanese in Japan Proper ends with 1920, only to begin again with the cessation of vital statistics publications in 1939. For the eighteen years between 1920 and 1938 there are detailed statistics on deaths by age and sex and by cause for the entire country and for prefectures, and deaths by age and sex for cities and minor civil divisions. The general pattern of change in crude rates, age standardized rates, and life-table death rates is downward until 1938, with the exception of the rates for men in the prime military ages. The expectation of life at birth for males increased from 42.06 in 1921-1925 to 44.82 in 1926-1930 and 46.92 in 1935-1936; for women, it increased from 43.20 in 1921-1925 to 46.54 in 1926-1930 and 49.63 in 1935-1936.

Significant relationships are evident in the pattern of mortality in Japan and in its changes. In general, mortality has declined much more rapidly for females than for males, but the mortality of females remains extraordinarily high. In 1920-1925, the probability of death for females rose above that for males at age 11 and remained above it until age 41; in 1926-1930, the period of excess female mortality lasted from age 14 until age 41. This general pattern is still discernible in 1935-1936, although it is disturbed by the increase in the probability of death for males between ages 22 and 33. For both males and females, and in all life tables, the probability of death rises to a temporary plateau from about age 18 to age 23 or 24 and then declines irregularly until age 35, after which there is a con-

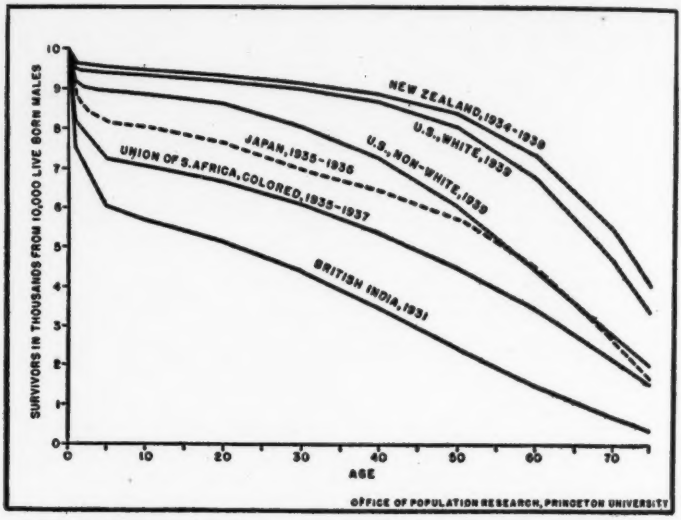


Fig. 3. Number of survivors per 10,000 live born males, Japan and selected countries.

tinuation of the increase in the probability of death.[17] All of these peculiarities are theoretically plausible if one considers the position of women in Japanese culture, and the high mortality produced in the late adolescent and early adult ages by the heavy migration to the cities, especially for males, and the still heavy burden of child-bearing for women.

The peculiarities in the age-sex incidence of mortality and its changes are so great that it is difficult to make precise comparisons between Japan and other countries. The expectation of life at birth for males in Japan in 1935-1936, 46.92 years, was similar to that in Poland, Bulgaria, and the Ukraine in the late 'twenties and the early 'thirties of the present century, or to that in France, Italy, and Germany immediately before the First World War, or to that in

[17] Japanese students have classified the q_x curve for prefectures into types largely on the basis of the extent of this peak at about age 20 and the extent of the trough that followed it. *See* Mizushima, Haruo, *et al.*: Fuken-betsu seimei-hyô. Dai ikkai [An Abridged Life Table for Each Prefecture of Japan]. *Chôsen igakkai zasshi* [*Journal of the Chosen Medical Association*], August, 1938, 28, No. 8, pp. 1136-1176.

Denmark, The Netherlands, England and Wales, Sweden, or Australia in the last decade or two of the nineteenth century. The number of survivors to each age among the male population of Japan and of selected countries is shown in Figure 3. Interestingly enough, the number of survivors among Japanese males in 1935-1936 throughout the life span was lower than that among United States nonwhite males, but higher than that among the colored population of the Union of South Africa.

The impact of the Japanese economic and political transformation on mortality is portrayed graphically in Figure 4. The infant death rate for Japanese males in 1935-1936 was 114. Comparable rates occurred in England and Wales, 1901-1910, and in The Netherlands, 1900-1909, but in these countries at these periods the probability of death at all ages after infancy was much lower than in Japan in 1935-1936. To secure a mortality equal to that for Japanese males at age 20, one has to go back to The Netherlands' experience of 1850-1859, at which time the infant mortality was almost 214, not 114 as it was in Japan in 1935-1936. No mortality at age 20 in English life-table experience has been as high as that in Japan in 1935-1936.

Mizushima Haruo and his colleagues of Keijo Imperial University have computed abridged life tables for each prefecture of Japan for the two periods, 1926-1930[18] and 1930-1935.[19] In general, the expectation of life at birth is lower in the northeast, higher in the southwest (Figure 5). It is lower in the prefectures of Back Japan facing the Japan Sea, higher in the prefectures facing the Pacific. Between 1926-1930 and 1930-1935, the mortality improved most in the prefectures of northeastern Japan, where it was highest, and in the prefectures containing such large cities as Tokyo, Osaka, Kyoto, Nagoya, and Fukuoka. The improvements were greatest for infants, and in general higher for females than for males. Increase in the

[18] Mizushima, Haruo, *et al.*: *Ibid.*

[19] Mizushima, Haruo, *et al.*: Fuken-betsu seimei-hyô. Dai nikai [The Second Abridged Life Tables of Prefectures in Japan]. *Chôsen igakkai zasshi* [*Journal of the Chosen Medical Association*], September, 1939, 29, No. 9, pp. 1768-1803.

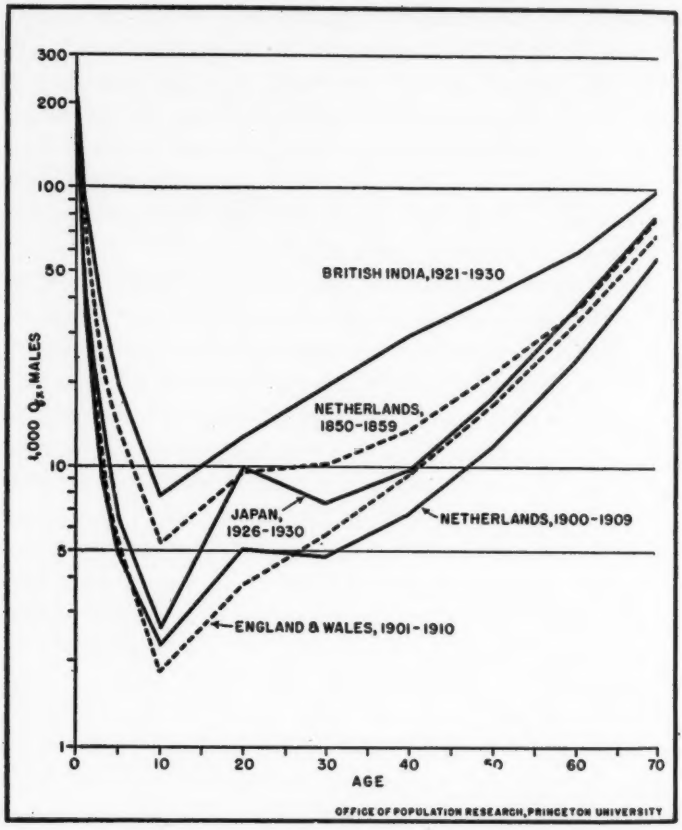


Fig. 4. Age schedule of mortality for males in Japan and selected countries.

mortality of males between the ages of 20 and 35 is apparent in most of these prefectural life tables. (It may be stated that this increase in q_x values appears to have been due to a general deterioration of health conditions rather than to direct military mortality.)

Detailed analysis of these prefectural life tables gives a rough quantitative measure of the human price Japan has paid for her rapid industrialization and urbanization, with its comparative neg-

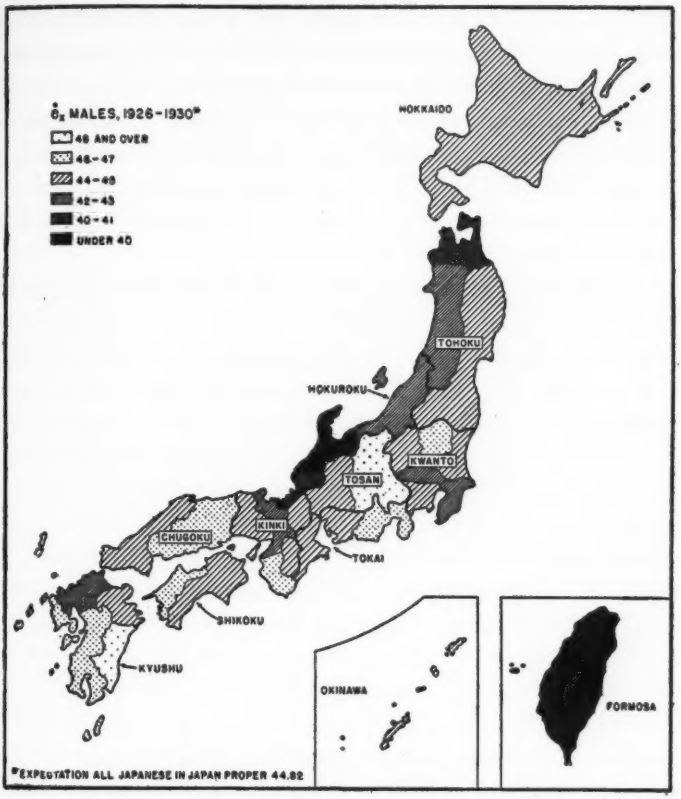


Fig. 5. Expectation of life at birth, males, for prefectures of Japan, 1926-1930.

lect of such details as sewer systems for her cities. In general, the proportion of children surviving from birth to age 5 is high in the southwest, small in the northeast, a relationship expected on the basis of the cultural and economic differentials between the two regions.[20] The proportion surviving from age 6 to age 12 is quite similar throughout the country. The proportion surviving from

[20] Mizushima, Haruo, *et al.*: Seison-hi yori mitaru kenkô-do no chiri teki bumpu. [Geographical Distribution of the Survival Ratio in Japan]. *Chôsen igakkai zasshi* [*Journal of the Chosen Medical Association*], November, 1939, 29, No. 11, pp. 2137-2152.

age 17 to age 32 is low in the southwest and the cities, high in the northeast and the agricultural areas. Similarly, the percentage surviving from age 32 to age 62 is low in the great urbanized prefectures, high in the agricultural regions. The knowledge and facilities of the cities and the industrial regions apparently permit the saving of infant and child life, but cannot counteract the influence of the poor working and living conditions in the industrial regions and the great cities.

Admittedly the mortality which has been described is high, but it is surprising that it is not higher. The per capita production of rice, or even the per capita real income, may have increased somewhat in Japan, but levels of living remain extremely low in comparison with those of Western peoples who either have gone or are going through industrial transformations similar to those that were occurring in pre-war Japan. Great maldistribution of wealth has continued to exist. In recent periods the surplus that might have gone either into increases of distributed real income or into publicly constructed improvements and services has gone into preparation for war or war itself. Infant mortality has decreased with astonishing rapidity, much more rapidly than it did in most European countries when their general schedules of mortality were at comparable levels. But the trends in adult mortality, especially of males, reveal clearly the price Japan was paying for a system in which human welfare had a low priority. At the same time, it must be emphasized again that mortality has declined in Japan, and that even forced industrialization under an unfavorable economic and political system has raised the expectation of life far above what it would have been in a subsistence agrarian economy.

What is the future trend of mortality in Japan? The military and civilian deaths of the war period cannot be predicted, but unless the population of Japan is decimated by famine and epidemics, the trends of the future will develop from those of the past. If Japan should be forbidden access to world markets and world trade, her

cities and her industries destroyed, there would be little chance of avoiding appreciable increases in mortality. If the period of the peace sees even a fairly adequate solution to the economic difficulties of Japan, death rates may fall much more rapidly in the future than they have in the past. Mortality in post-war Japan is a dependent, not an independent variable.

Trends in Fertility

The statistics for an analysis of Japanese fertility are quite deficient. There is no national information on birth order, size of completed family, or number of children ever born. The Cabinet Bureau of Statistics made special studies of the number of births by age of mother in 1925 and 1930. There was increasing agitation for adequate fertility data through the 'thirties, but few of the plans were realized. Yearly tabulations of births by age of mother and occupation of father or mother were initiated in 1937,[21] but they are of limited value pending the availability of the detailed results of the census of 1940. Many special studies have been made, but the few discovered are limited in both materials and methodology. In any event, systematic analysis of these studies is impossible because only a small proportion of the original publications are available.

There is little definitive information on the trend of the birth rate in Japan in the centuries prior to 1920, or even in the decades between 1868 and 1920. Births and deaths were balanced to produce the population stability of the latter half of the Tokugawa period, but it is impossible to determine the precise level of either fertility or mortality. The number of infants surviving the neonatal period was cut by both abortion and infanticide, but the scattered statistics which have been discovered are not sufficient to permit adequate quantitative analysis. The most probable hypothesis is that, despite

[21] A tabulation for the total country and each prefecture of births by sex and legitimacy status according to the occupation of the father or mother was first published in 1937. *See:* Nihon. Naikaku tôkei-kyoku [Cabinet Bureau of Statistics]. *Jinkô dôtai tôkei* [Vital Statistics], 1937, pp. 46-51.

these practices, the fertility of the Tokugawa period would have yielded rapid population growth if mortality had not been high.[22]

The official birth rates for the period between 1872 and 1920 were computed by relating registered births to total population counts secured by summation of the registers. As such, they are subject to the same biases that characterize mortality statistics for this period. The recorded birth rate increased quite consistently from 28.5 in 1886-1890 to 34.6 in 1921-1925. There were two factors operative in producing this upward trend, one; the continued improvement in registration; the other, the gradual decline of infanticide and abortion. Analysis of the probable improvement in the completeness of birth registration in the later decades of the precensal period is in process, but too incomplete to permit a quantitative estimate of the effect of the improvement in registration on the birth rate. Statistical analysis of the decline in the prevalence of abortion and infanticide is impossible.

The fact of decline in the birth rate of Japan in the recent period cannot be doubted. There was an almost continual decline from a quinquennial average of 34.6 in 1921-1925 to 33.5 in 1926-1930, 31.6 in 1931-1935, 30.6 in 1936, 30.8 in 1937, and 27.0 in 1938. These declines, although appreciable, are proportionately less than those that occurred in the nations of Europe during the same period of time.

The discovery of the regions or the population groups within Japan that were responsible for the observed declines in the national birth rate, or, conversely, of those regions or population groups that were responsible for the slowness of the decline, requires study of the differential patterns and trends within Japan. The distortions in age and sex structure produced by the migration of youth to the large cities and the industrial regions are so great that the use of crude rates for comparative analysis within Japan is hazardous.[23]

[22] Sekiyama, Naotarô, *Op. cit.*

[23] For a Japanese attempt to grapple with these problems through the standardization

(Continued on page 245)

The fragmentary data on births by age of mothers must be utilized, despite their quantitative inadequacy and their qualitative deficiencies.[24]

The declining fertility of Japan has been due primarily to the decline in births to women in the age groups under 25. The number of births per 1,000 women 15 to 19 years of age declined from 21 in 1925 to less than 10 in 1937; that to women 20 to 24 declined from 112 to 87 during the same period. There was no appreciable change in the fertility of women aged 25 to 29. Birth rates to women thirty years of age or over declined consistently throughout the period. The net effect of these declines in the various age groups was a consistent decrease in the gross reproduction rate for all Japan from 2.5 in 1925 to 2.4 in 1930, 2.2 in 1937 and 2.0 in 1938.

The fertility decline in Japan between 1920 and 1937 or 1938 is related to the precipitant decline in the proportions married at the

of birth and death rates, *see:* Tate, Minoru: Waga kuni jinkô no chihô-betsu zôshoku-ryoku ni kansuru jinkô tôkei-gaku teki ichi kôsatsu [A Statistical Examination of the Reproductive Power of the Population, by Districts]. *Jinkô mondai* [*Population Problems*], December, 1936, 1, No. 4, pp. 453-483; June, 1937, 2, No. 1, pp. 217-238.

[24] Tabulations of births by age of mother for all Japan and for cities of 100,000 and over have been published for 1925, 1930, 1937, and 1938. For 1925, *see:* Nihon. Naikaku tôkei-kyoku [Statistical Bureau of the Cabinet]: *Fubo no nenrei to shussei to no kankei* [Births in Relation to Age of Parents]. *Chôsa shiryô* [Research Materials], No. 1. Tokyo, 1927.

Tabulations for all Japan, cities of 100,000 and over, and the individual prefectures for 1930 were published in: Nihon. Naikaku tôkei-kyoku, jinkô-ka [Statistical Bureau of the Cabinet, Population Section]: *(Showa go-nen) Fubo no nenrei-betsu shussei oyobi shisan tôkei* [Statistics of Live Births and Stillbirths by Age of Parents in 1930]. Tokyo, 1935. This publication has not been located, but some data from it are quoted in secondary sources.

Tabulations for all Japan and cities of 100,000 and over for 1937 and 1938 were published in: Nihon. Naikaku tôkei-kyoku [Statistical Bureau of the Cabinet]: *Jinkô dôtai tôkei* [Yearbook of Vital Statistics], 1937 and 1938. Tokyo, 1938 and 1939.

Age distributions of women were taken directly from the various census volumes and refer to October 1 rather than July 1. Those for cities of 100,000 and over were secured by summation of the age distributions for individual cities given in the individual prefectural volume of the various censuses. The estimated age distributions for cities in 1937 and 1938 made by Etô were utilized after checking them against the age distributions of the 1935 census. *See:* Etô, Masami: Tohi-betsu jinkô shizen zôka-ritsu no hikaku [The True Rate of Increase of Urban and Rural Populations in Japan]. *Fukuoka igaku zasshi* [*Hukuoka Acta Medica*], May, 1941, 34, No. 5, pp. 78-94.

Numbers of births were taken from : Japan. Bureau de la Statistique générale du Cabinet impérial: *Resumé statistique du mouvement de la population* . . . Tokyo, 1920-1936. Numbers of births and deaths for 1937 and 1938 for prefectures and cities were taken from: Nihon. Naikaku tôkei-kyoku [Statistical Bureau of the Cabinet]: *Nihon teikoku tôkei nenkan* [Statistical Yearbook of the Japanese Empire], 1938 and 1939.

younger ages, but the problem of measuring the proportion of the decrease in fertility due to decline in marriage or increasing age at marriage as against that due to decline in marital fertility is almost insoluble. The census definition of marital status is a *de facto* one, including both formal and informal marriages. Marriage statistics refer only to formal marriages, and in the vital statistics only the child of a formal marriage is legitimate. Illegitimate children include both the true illegitimate, socially defined, and the children of informal marriages. Since illegitimate births constitute only a small proportion of all births, an approximate measure of the trends in marital fertility between 1925 and 1930 may be secured by relating both legitimate and natural live births (excluding the recognized illegitimate[35]) to the number of married women as defined in the census. This admittedly crude technique reveals a different pattern of change from that given by relating all live births to all women of specified ages. Birth rates for married women aged 15 to 19 and 20 to 24 changed only slightly, while there was a decline of ten per cent in the birth rate to married women aged 25 to 29, the age group for which total fertility revealed no change. Birth rates to married women aged 30 or above also declined.

Two conclusions seem justified on the basis of the changing fertility schedules for all Japan. First, the decline in the fertility of women in the younger ages is related to the decline in early marriages, however marriage is defined. Second, the fertility of the married has declined in the later years of the reproductive period. An attempt is being made to determine the proportionate relationship between declines in fertility and declines in the proportion married at the various ages. Even this information, however, will give no definite answer to the problem of causal relationships involved here. Informal marriages are recognized and socially ac-

[35] A "recognized illegitimate" infant is one which though not born of a registered marriage has been legally "recognized" by its father. For a discussion of the status of such children, *see* the article "Shoshi . . . (enfant naturel reconnu)" in: *Hôritsu-gaku jiten* [Dictionary of Law], Iwanami shoten, Tokyo, 1934-1939, p. 1384.

cepted unions that tend to be transformed into formal marriages before the birth of a child. Hence the diffusion of birth control might be expected to postpone the registration of the informal marriages and thus produce an increase in the average age at first marriage as legally defined. Nuptiality tables constructed on the assumption that only formal marriages produced changes in marital status indicated that the decreases in the proportions married in the successive censuses are due primarily to decreases in informal marriages.

The analysis of the relationship between declines in fertility and economic changes within Japan is still incomplete, but preliminary results indicate that the strong positive correlation between urbanization and declining fertility which has characterized Western culture also exists in Japan. Fertility in cities of 100,000 and over has been consistently much lower than that in the remainder of the country, and prior to 1938 the declines were much greater. The pattern of decline by age groups was similar to that for the entire country, i.e., precipitant declines at ages under 25, relative stability at ages 25 to 29, and decreases at the higher ages. (Figure 6.) Gross reproduction rates declined from 1.8 in 1925 to 1.7 in 1930, 1.6 in 1937, and 1.4 in 1938. The extent of the decline in 1938 is due to war and mobilization for war. There is no evidence that war had affected births appreciably prior to 1938, except in so far as the preparations for war hastened the urbanization and industrialization of the population.

The pattern of change outside cities of 100,000 and over was quite different. Birth rates to mothers under age 25 declined while those to mothers aged 25 to 29 increased, but above age 30 changes were slight. Fertility declines occurred primarily in the age groups in which the census statistics revealed a decided drop in the proportion married. In age groups in which the proportion married remained the same, there was little decline in fertility. It appears that the pattern of controlled fertility has not spread to any appreciable

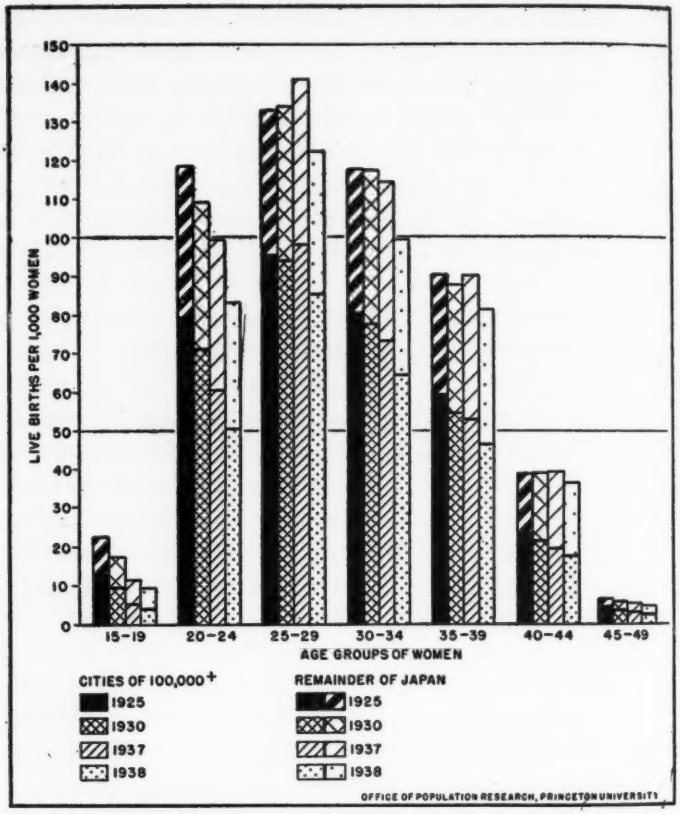


Fig. 6. Age schedules of fertility for Japanese cities of 100,000+ and for the remainder of Japan, 1925, 1930, 1937, and 1938.

extent outside the cities of Japan. Incontrovertible evidence of controlled fertility is found only in the vital statistics of cities of 100,000 and over, where age-specific birth rates declined continuously in the age groups in which marital status as indicated by census returns has remained almost constant.

Since some of the prefectural census volumes for 1920 are not available, the description of the trends in reproduction rates from

1920 through 1935 must be based on the age distributions for urban and rural areas as officially defined. Indirect standardization must be used, since the only schedules of births by age of mother available are those for all Japan, cities of 100,000 and over, and a few of the individual cities.

The trend of the gross reproduction rate has been downward from 1920 to the present for all Japan, cities and regions outside cities. In the fifteen years between 1920 and 1935, the gross reproduction rate for all Japan declined from 2.6 to 2.2, for urban areas from 1.8 to 1.6, and for rural areas from 2.8 to 2.6 (Figure 7). The trend in net rates is much less pronounced, since there were continuous and fairly rapid declines in the mortality of women before and during the reproductive years. For Japan as a whole, these declines in mortality almost counterbalanced the declines in fertility. The net rate for all Japan declined from 1.7 in 1920 to 1.6 in 1935; for urban areas, it was 1.2 at both periods, and for rural areas, it increased from 1.8 to 1.9. It should be noted that the net reproduction rate for the country as a whole could decline while the rates for both urban and rural areas remained almost stationary because the urban population constituted a rapidly increasing proportion of the total. Real

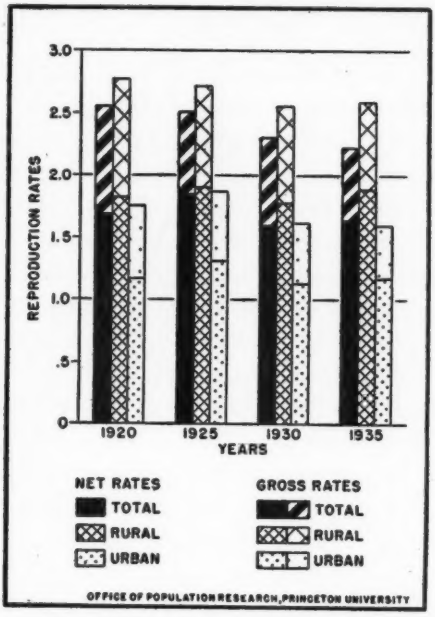


Fig. 7. Gross and net reproduction rates for Japan: total, urban, and rural for 1920, 1925, 1930, and 1935.

declines in net reproduction rates occurred in all areas in 1938, when the war-induced declines of fertility and increases in mortality lowered the net reproduction rate for cities of 100,000 and over to 0.97, while that for areas outside cities of 100,000 and over declined to 1.48.

The trend of fertility in the six large cities of Tokyo, Osaka, Kobe, Kyoto, Nagoya, and Yokohama reflects the more intense impact of urban culture. Gross rates for these six cities show no trend between 1920 and 1925, but decline consistently for each city and each time period between 1925 and 1935. Age schedules of fertility for the six cities as a whole in 1935 were similar to those for cities of 100,000 and over in 1937, but there were differences in the level and the age pattern of fertility among the cities. Age specific birth rates were relatively low in Osaka, Kobe, and Kyoto, and relatively high in Tokyo, Yokohama, and Nagoya. Net reproduction rates were below unity for Tokyo, Osaka, and Kobe in 1920 and for Osaka and Kobe in 1930 and 1935.

Preliminary gross and net reproduction rates are being computed for each prefecture for each of the census periods from 1920 through 1935. These rates should be regarded as exploratory, not definitive, since there are major methodological problems involved both in the determination of the age schedules of fertility to be used for standardization and in the computation of mortality schedules which will take into consideration the continuing decline from 1920 through 1935.

Gross reproduction rates for prefectures in 1930-1931 portray in accentuated form the urban-rural and industrial-agricultural pattern of regional differentials so apparent in the crude birth rates. (Figure 8.) The five prefectures with gross rates of less than two included four of the six largest cities: Tokyo, Osaka, Kyoto, and Kobe. The eight prefectures with gross reproduction rates of between 2.0 and 2.24 either contained or were adjacent to large cities. The seven prefectures with gross rates of 2.75 or above were all in

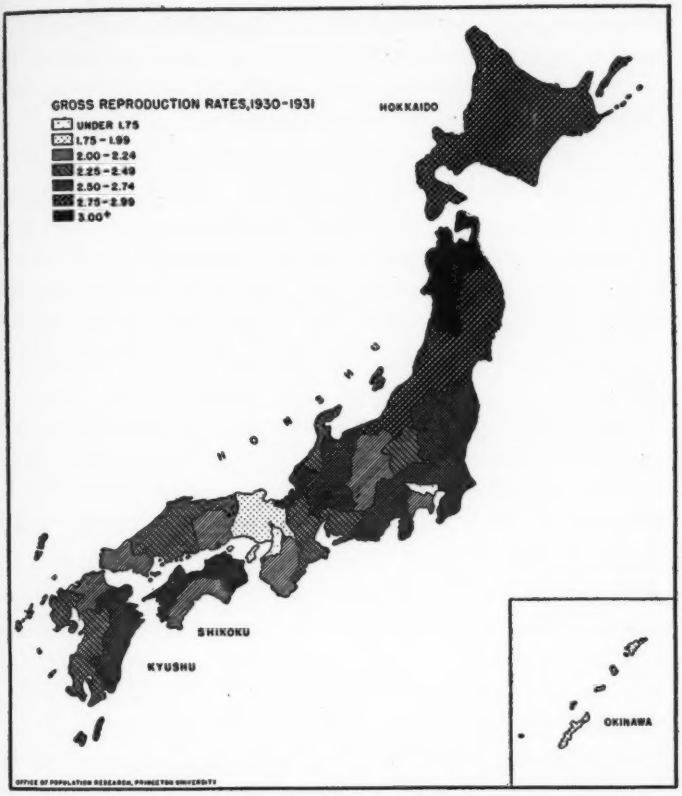


Fig. 8. Gross reproduction rates for prefectures of Japan, 1930-1931.

the backward agrarian regions of northeast Japan. Declines in gross reproduction rates occurred in each of the 47 prefectures of Japan except Okinawa in the decade between 1925 and 1935.

The problem of prefectural changes in net reproduction rates is more difficult than that of gross rates, since declines in fertility and mortality were occurring simultaneously in all prefectures. Net rates computed for 1925 and 1930 by using the survival values from the 1926-1930 prefectural life tables for both time periods indicate a

decline in net reproductivity in each of the forty-seven prefectures. This conclusion cannot be accepted, however, since gross reproduction rates that were declining have been transformed into net rates on the false assumption of constant mortality for each prefecture. Net rates computed for 1930 and 1935 by using the survival values from the 1926-1930 life tables for 1930 and those of the 1930-1935 life tables for 1935 indicate only slight changes in net reproduction rates between the two periods. There is little consistency in the direction of the changes, except that net rates declined in the prefectures containing the cities of Tokyo, Yokohama, Osaka, Kyoto, Kobe, and Nagoya, and in the majority of the other urbanized prefectures.

This preliminary exploration of prefectural trends indicates that in the period studied declines in fertility and in mortality were practically balancing each other. If Japanese experience were to follow that of the West, accelerating declines in fertility would overtake declines in mortality to produce real declines in the rate of natural increase. The immediate effect of the war has been to quicken the decline in fertility and brake or reverse the decline in mortality.

Whether or not the future trends in fertility in Japan will represent an orderly continuation of those of the past or will deviate from them in as yet undetermined ways is an open question. Fertility differentials between rural and urban areas have long existed in Japan; they were well developed in 1920 and 1925. In the recent period, both total and marital fertility have declined in urban areas, and especially in cities of 100,000 and over. But in the rural areas there is little evidence of a decline in fertility beyond that produced by the decreasing prevalence of informal marriages and the increasing age at formal marriage. The decline in national fertility has been due predominantly to the increasing age at marriage, however defined, and to the increase in the proportion of the total population resident in large cities. It is difficult to predicate the continued

action of either of these two factors. The decline in the proportion married might extend into the age groups above twenty-five, and industrialization and urbanization might continue until Japan became an England. Barring these circumstances, the continued decline of fertility depends in large part on the diffusion of patterns of family limitation to that group which still constitutes the majority of the Japanese population, the inhabitants of the rural areas and the smaller towns and cities. A liberal regime, the elimination of the agrarian ideology and the feudal structure, socialized education, and the democratization of opportunity, if accompanied by rising levels of living, probably would produce rapid declines in age-specific fertility rates in both large cities and the rural areas. Whether or not these changes will occur in post-war Japan is a question to which demography has no answer.

Conclusions

This study of the dynamics of population in Japan is still too incomplete to permit other than tentative hypotheses as to the relations between industrialization, urbanization, population growth, and political stability within this Asiatic culture. The urbanization that has accompanied the economic transformation of Japan has been even more rapid than that which occurred in the West. The similarity to the West extends even to the patterns of age and sex selectivity and the influence of the distance factor in internal migration. Declines in both mortality and fertility have accompanied the urbanization and industrialization of the country, just as they did earlier in the nations of the West. The specific patterns of decline in mortality have been modified and the rate of decline blunted by the combination of low levels of living, long hours of work under unhealthful working conditions, the meagerness of the public health and welfare activities, and the diversion of the economic surpluses created by industrial expansion and technological advances to the noneconomic uses of imperialism and war. Fertility

has declined, but the rapidity of the decline has been braked by the maintenance of feudal agrarian conditions of living and thinking among the masses of the people.

The relation of population growth, political ideology, and war has not been considered specifically in this report. However, the factual data on internal redistribution of population within Japan have direct relevance to this problem. Japan's economic transformation has permitted the absorption of the natural increase of both cities and rural areas in the expanding industries and service occupations of the urban areas. The primary population problem of Japan is not that of areas of agricultural settlement for her rapidly increasing agricultural population. Rather, it is that of providing an expanding industrial economy with increasing numbers of job opportunities until such a time as the further diffusion of patterns of family limitation can eliminate the continued increase of persons in the productive ages. It is essentially a problem of access to markets and the creation of consumer purchasing power within the country through the democratization of the distribution system. Japan, like Germany, has used demographic arguments as the basis of political propaganda aimed directly toward national aggrandizement.

This analysis of the population history of Japan offers no basis for predicting the future population of any other region of Asia. If the demographic history of post-war China should duplicate that of Japan between 1870 and 1940, China would have a total population of approximately a billion people by the year 2,000. Only the naive could assume that the demographic history of China or any other Asiatic country would duplicate that of Japan. Whether or not the population of China, of India, or of Java will increase more or less rapidly with industrialization than did that of Japan will depend in the last analysis on nondemographic factors.

If industrialization is accompanied by the maintenance of order, increased food production, improved transportation, elementary public health activities, and the diffusion of knowledge on the basic

facts of sanitation and child care, the Malthusian controls of famine and disease will be eliminated and normal death rates will fall. Population growth will be rapid, just as it was at comparable periods of development in the nations of the West and in Japan. Fertility will decline as urbanization and its correlated habits of living and thinking affect increasing proportions of the total population, either directly through life in the cities or indirectly through processes of cultural diffusion.

Whether or not this hypothetical vital transformation can occur depends essentially on whether or not agricultural and industrial productivity can increase rapidly enough to provide minimum levels of living for the increasing populations. If such economic expansion proves impossible, mortality cannot decline.

The dynamics of fertility decline in Japan during the three-quarters of a century since the opening to the West offer little basis for optimism with reference to the possibilities of an early cessation to population growth in the overcrowded regions of Asia. It is true that fertility declined in Japan, but in 1935 fertility even in the large cities was very high in relation to that in the West. Fertility in the rural areas and the small towns had declined only slightly except as the increasing age of marriage and the decreasing prevalence of informal marriages had decreased the fertility of the younger women. The decline in national fertility that was producing the slackening rate of population growth for the nation as a whole was fundamentally a by-product of urbanization. If the same situation is to occur in the great overcrowded regions of the Asiatic mainland, the race between the expansion of economic opportunity and the accelerated population growth produced by mortality control would seem to be hopeless. The major demographic need of Asia thus becomes that of devising ways by which the rate of increase of the peasants can be controlled much more rapidly than it would be if reliance were placed solely on the slow processes of cultural diffusion from the cities to the countryside.

DEMOGRAPHIC FACT AND POLICY IN INDIA[1]

KINGSLEY DAVIS

WITHOUT the inclusion of India any discussion of worldwide population policy would be incomplete. Not only does India contain almost a fifth of the world's population, but she embodies, on a massive scale, the major problems of all the heavily peopled agricultural countries of the Orient. Also, with her unique civilization and semi-colonial status, she raises some fundamental questions of international population policy. It is fortunate, therefore, that she has the longest series of fairly reliable census statistics in the East — that, in fact, her population data, though far from perfect, are better than those for any other area of equal backwardness.

POPULATION AND DENSITY

At present India has a population of about 403 millions, almost the same as that of Europe exclusive of Russia. This entitles her to a place beside Europe and Eastern Asia as one of the world's three great clusters of people. With an area of over one and a half million square miles, her over-all density is approximately 256 persons per square mile. This, for an agricultural country, is moderately high, though considerably below that of Puerto Rico, Java, and the Philippines. Since, however, large parts of India are dry, a better measure of her position is the density of the farming population on the agricultural land. About 68 per cent of the people are dependent on agriculture; the number of these per square mile of arable land is 423. This figure, as Table 1 and Figure 1 reveal, is higher than that for European countries but lower than that for some other Asiatic countries which have a comparable percentage of their population dependent on agriculture. Another indication of the concen-

[1] From the Office of Population Research, School of Public and International Affairs, Princeton University.

tration on agricultural land in India is the fact that in some almost purely agricultural districts the general density rises above 1,000 per square mile, and in many others, above 550. Excluding major cities, approximately 38 per cent of the population lives in districts with over 550 persons per square mile. These districts, which occur mainly in the Ganges Valley and along the coasts of the peninsula, represent only 12 per cent of the total area.

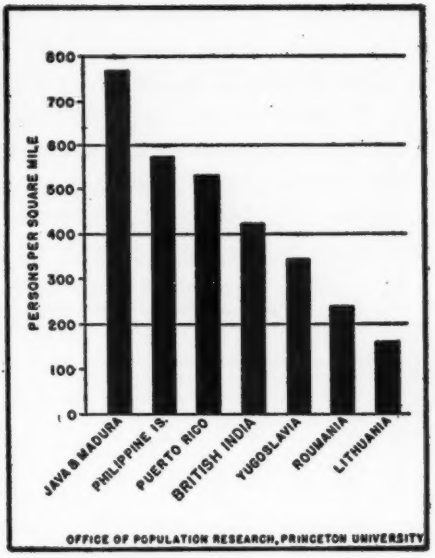


Fig. 1. Persons dependent on agriculture per square mile of arable land in British India and selected countries.

Table 1. Persons dependent on agriculture per square mile of arable land.

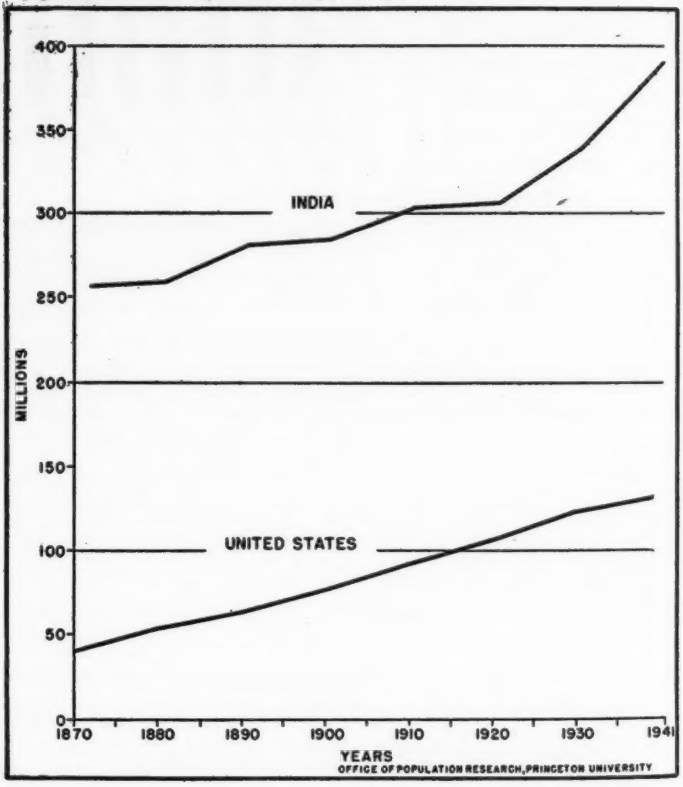
Country	Date	Percentage of Population Dependent on Agriculture	Number per Square Mile of Arable Land
Lithuania[1]	1930	70.	161
Roumania[1]	1930	72.4	240
Yugoslavia[1]	1930	76.3	344
BRITISH INDIA[2]	1931	67.9	422
Puerto Rico[3]	1930	65.9	533
Philippine Islands[4]	1939	70.0	573
Java & Madura[5]	1930	63.0	769

[1] Based upon data in a forthcoming publication by Wilbert E. Moore, *Marginal Economies of Europe.*
[2] Census of India, 1931. Vol. I. Part II, p. 206.
[3] United States Census Bureau: 15th Census of U. S. Outlying Possessions and Territories. pp. 193-194.
[4] Philippine Islands Commission of the Census: Census of 1939. Vol. II, p. 496.
[5] Netherland Indies, Department van economische zaken: Volkstelling, 1930. Vol. 8. p. 124.

Growth of the Population

The current density has arisen from a substantial but not a phenomenal population growth. (*See* Figure 2.) Between 1872 and 1941 the population of the present area in India grew 54 per cent. The United Kingdom during the same period increased 56 per cent, and during the 70-year period from 1821 to 1891 (more comparable to India's recent history) it increased 81 per cent. Similarly Japan, during the 70 years from 1873 to 1942, experienced a growth of

Fig. 2. The growth of population in India and the United States, 1870-1941. (The population of India is adjusted to the 1941 area.)



approximately 136 per cent. Comparatively, then, India's increase has not been extremely rapid.

The growth, however, has been extremely sporadic, and has tended lately to accelerate. In the decade prior to 1881 the population remained practically stationary. In the next decade it grew over 9 per cent. Following that, during 1891-1901, it grew hardly at all, only to advance once more in the succeeding decennium. (*See* Figure 3.) This cyclical process continued until 1921. At this date an uninterrupted period of increase set in which has lasted longer and attained more momentum than any previous spurt, continuing until the present moment. From 1921 to 1931 the increase, almost 11 per cent, was the highest on record for India, but during the following decade, 1931-1941, the record was broken again by a 15 per cent growth. This period — from 1921 to 1941—was the first time in India's known demographic history that she experienced two successive decades of rapid growth. Thus at a time when the Western nations were approaching demographic stability, India, with its much larger population, was just starting what appears to be a period of rapid and gigantic expansion.

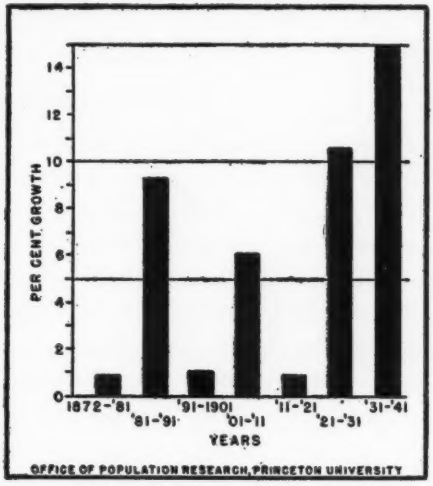


Fig. 3. Decade rates of growth of the Indian population, 1872-1941. (Populations adjusted to the beginning area of each decade.)

To be sure, the recent *rate* of growth (1.2 per cent per year) has not been phenomenal for modern times. But because of the massiveness of India's existing population, even a moderate percentage

increase means a huge absolute increment. For example, during the twenty years from 1921 to 1941, she added 83 million inhabitants to her total. What seems important is not simply the rate of growth but these huge absolute additions and the promise of even greater additions in the future.

The Demographic Trends

Mortality. Throughout the known history of India's population, its lulls and spurts have been governed, not by fluctuations in the birth rate, but by wide variations in the death rate. These wide variations arose primarily from three not wholly separate causes: wars, famines, and epidemics. In ordinary years, as a result of poor diet and endemic disease, the death rate was high. But since it was surpassed by an even higher birth rate, the population grew moderately during "normal" times. Coming every few years, however, a calamity of one sort or another would suddenly increase the death rate and wipe out the population increment that had been accumulating. In this way the long-range result was virtually a stationary population. During the period for which we have statistics there have been, as we have seen, three decades during which the population hardly grew at all. In the first two of these the explanation lay in two great famines, the first one occurring in 1876-1878, and the second in 1898-1900. In the third the explanation lay in the influenza epidemic of 1918, which according to our estimate, killed more than 15 million people. (*See* Figure 4.)

Perhaps by 1872, the time of the first census, the frequency of such calamities had been reduced. The earliest reduction may have been in deaths contingent upon war and banditry. We cannot be certain, though historical accounts would lead to this conclusion. If so, the next great reduction, for which we have better evidence, was in deaths resulting from famines, the last of which, on a large scale, occurred in 1908. And the final great reduction was apparently in the control of epidemic disease, a phase that gained its greatest

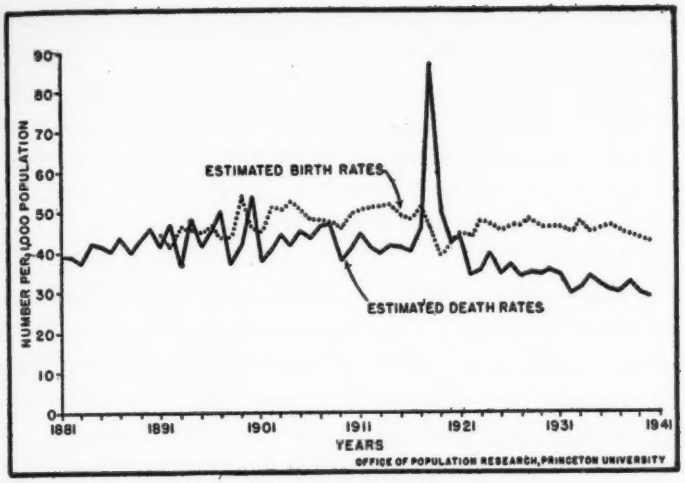


Fig. 4. Estimated birth and death rates in India, 1881-1941.

momentum after 1920 and is still continuing. As a result of the ever greater control over these more spectacular causes of death, the average death rate declined. It is this decline in mortality that has caused the long-run growth in the Indian population, and has led of late to the acceleration of that growth. (*See* Figure 3.)

The actual decline in the death rate can be proved by four lines of statistical evidence: (1) the registered deaths, (2) the registered infant mortality, (3) the estimated deaths, and (4) the total expectation of life in successive life-tables. I shall not review these types of evidence.[2] Each is open to some criticism, but since each is based to some extent on a distinct kind of data,[3] and since they all indicate a decrease in mortality, there seems not the slightest reason for doubting this decline.[4] The average decennial death rates, estimated

[2] They will be reviewed in the writer's forthcoming monograph on the population of India.

[3] For instance, the life-tables are made by differencing the censuses, not by using vital statistics.

[4] Some Indian writers, bent on using whatever propaganda device lies at hand, profess to see no decline in mortality during the period of British control. *E.g.*, Chand, Gyan: India's Teeming Millions. London, Allen and Unwin, 1939, pp. 95-129.

by subtracting the intercensal increase from the estimated births for each decade were as follows:

1881-1891	41
1891-1901	44
1901-1911	43
1911-1921	47
1921-1931	36
1931-1941	31

These are minimum estimates, especially the earlier ones.[5] They probably conceal a part of the decline in the death rate — a decline which perhaps began prior to the period of census taking. But in any case the decline since 1921 is unmistakable. The rate for 1931-1941 is 29 per cent below the forty-year 1881-1921 average.

Fertility. In contrast to mortality, fertility has experienced a smaller decine, as shown by both the recorded and the estimated rates. The average rates for six decades were as follows:

	Estimated[6]	*Reported*
1881-1891	49	—
1891-1901	46	34
1901-1911	49	37
1911-1921	48	37
1921-1931	46	33
1931-1941	45	34

[5] This method of estimating death rates requires first a method of estimating births. The latter, described in Footnote 6, gives a low rather than a high estimate, because not all the Indian life-tables have been based on mortality rates as low as those actually prevailing. Also, the intercensal increase is probably higher than the true increase because the later censuses are in some cases more complete than the earlier. The consequence is that when an exaggerated intercensal increase is subtracted from a slightly underestimated number of births, the resulting estimate of deaths is too small.

[6] These estimates were made by using an appropriate life-table to estimate the size of the original cohorts which, at the current rates of survival, would give rise to the children age 0 to 9 at each census. The method, which we call the "Reverse Survival" method, is described in the forthcoming monograph on India, mentioned above. Migration was omitted from the calculation because for the whole of India it is negligible. The method probably underestimates slightly the birth rate, and because of possibly better enumeration of children in later censuses, it may underestimate to a small degree the declining trend. However, other measures of fertility also fail to show much of a decline.

In Figure 4 our estimates for single years from 1891 to 1940 are depicted.[7]

Clearly, the accelerating growth of the Indian population has as its immediate cause the increasing spread between a declining mortality on the one hand and a less rapidly declining fertility on the other. Migration has not been a factor. During the decades under consideration India has sent out between three and four million permanent emigrants. The current of migration, therefore, has tended to decrease rather than accelerate the growth rate, but it has been so small in comparison to the total mass of India's population that its effect has been infinitesimal.

The Social Causes

It is obvious that the population of a given area cannot increase rapidly for many centuries.[8] Even a modest growth, if continued through a great number of generations, would result in a layer of human beings several yards deep on the earth's surface. The current world-wide tendency toward rapid growth, which Knibbs estimated at .86 per cent per annum during the nineteenth century,[9] must therefore be a passing phase of human history. Presumably it is a phenomenon of the transition from an archaic type of civilization to a modern type, contingent upon new cultural inventions of revolutionary importance. The demographic side of this transition is a change from a wasteful type of demographic balance in which high birth rates are matched by high death rates, to a much less wasteful kind in which low birth rates are matched by low death rates. The rapid population growth associated with the transition

[7] These rates were estimated by raising the reported births for each year according to the average percentage of underregistration deduced from the estimated decade rates given above. It was assumed that the average underregistration during the decade applied to each particular year in the decade. The same procedure was used for estimating the death rates for single years.

[8] Knibbs, George H.: The Shadow of the World's Future. London, Ernest Benn, Ltd., 1928.

[9] *Ibid.*, p. 11.

arises from a striking fact — namely, that in the transformation the death rate generally declines before the birth rate. The resulting gap between the two provides an accelerated population growth, until eventually the forces of modernization finally depress the birth rate too and thus restore the balance between births and deaths.[20]

Just why the decline of fertility lags behind that of mortality requires a complicated explanation. Only one step in that explanation will be mentioned here. It begins with the proposition that both reproduction and the preservation of life are indispensable for the continuance of any society, and therefore, through socialization, are instilled as profound values in the minds of each new generation. It follows that with the coming of a more deliberate, innovative control over human affairs, a movement to limit fertility in unaccustomed ways will meet strong opposition as being contrary to an established value, whereas attempts to preserve life, even in unaccustomed ways, will meet with approval as being in favor of an established value.[21] It is only after the successful preservation of life has resulted in larger families, and these larger families have proved an embarrassment to the individual in the highly urbanized and mobile structure of modern society, that he seeks a way around the full practice of his high fertility mores. He leaves the customary evaluation intact, but tends to violate it to a certain degree in his own private behavior.[22] Thus the lag of birth control behind death control is implicit in the growing rationalism of modern life, which first attacks the negative value (death), and only later the positive value (high fertility).

[20] *Cf.* Notestein, Frank W.: Some Implications of Population Change for Post-war Europe. *Proceedings of the American Philosophical Society*, Vol. 87, No. 2, 1943, p. 165.

[21] Of course, there are plenty of instances in which new methods of preventing death are rejected, but these are all instances in which the people believe that the method does not in fact achieve the result claimed. They distrust the motive of the physician or the efficacy of the remedy. Once they come to believe that the innovation really promotes health, they accept it.

[22] *Cf.* Penrose, E. F.: Population Theories and Their Application. Stanford University, California, Food Research Institute, 1934, pp. 115-120.

Since the lag almost invariably accompanies the cultural revolution, its presence now in India is not strange. And because it eventually disappears, it will someday disappear in India. But now arises the crucial question: Is the situation of India — and indeed, of other parts of the Orient — peculiar in any way that will prolong or intensify the lag? Perhaps so, because India has a semicolonial status and is borrowing rather than originating the cultural revolution.

India's situation is not strictly analogous to that of Europe during the industrial revolution or to that of Japan. Europe's modernism, being rooted in her own peculiar heritage, arose internally and spontaneously. It also, for this reason, arose earliest, and consequently brought industrialization at a time when there was no industrialization elsewhere. This gave Europe a monopoly over the virgin resources and expanding markets of the entire world. Furthermore, she commenced her period of rapid population growth at a time when her initial population was still fairly sparse, and she had the advantage that any real surplus could be diminished by emigration to the newly discovered territories. India, on the other hand, has begun with a civilization most unpropitious for modernization — with a rigid caste system, a very otherworldly religion, and a servile political status. She has also started with a comparatively dense population, which, owing to the lateness of the period, can find few outlets for free and attractive emigration. She has had to pursue her industrialization in a world where markets are already dominated by advanced industrial peoples. Finally, her modernization has not resulted from an internal impetus to which all phases of her civilization have contributed, but has been borrowed from the outside. This may speed the process of modernization, but it may conceivably have the opposite effect; because the diffusion of Western civilization has not been a balanced diffusion. With the gulf between the two cultures and the difference of political power, some aspects of Westernism have spread to India more rapidly than

others, producing a disharmony of a type that Europe did not experience.

One may argue that Japan too has borrowed Western civilization, and with disconcerting rapidity. But the Japanese, in contrast to the Indians, have kept control of the process. They borrowed more deliberately and rewove the borrowed elements more solidly into their own pattern. They had a social structure more susceptible to modernization. Also, they entered the field of industrial expansion at an earlier time when the Asian sphere was still relatively unexploited by Western powers. Above all, they did not fall into a colonial or semi-colonial status. India, with her economy controlled and managed by alien interests, has had to compete not only with Europe and America but also with Japan. She has been largely confined to the role of producer of raw materials for foreign industry, and has been industrially retarded for that reason. She has lost out in the same way that other colonial and semi-colonial peoples have lost out. As a result, her modernization has been, if not slower, at least more one-sided than it might have been.

The differential diffusion of Western culture may extend and exaggerate the lag of fertility decline behind mortality decline. This is a highly speculative conclusion, but it does seem that modernization has proceeded mainly in those matters that are profitable, easy, or sentimentally desired by the Europeans. Mortality has been reduced not only because the natives were most willing to cooperate on that point, or because its reduction was economically and militarily advantageous, but also because the control of mortality appealed strongly to Western humanitarianism. European culture is the type in which this value is exceptionally strong and the techniques extremely advanced. But even so, health measures were generally introduced only when they involved little disturbance of the Indian masses.

Hypothetically, the first step in improved mortality came with the Pax Britannica, which brought political peace and public

security to this land of internecine war, governmental corruption, rapacious taxation, hereditary banditry, and cultural and racial diversity.

Whether the first step is imaginary or not, the second — the control of famines — is quite definite. The British reduced the isolation of famine areas by building, often for the specific purpose of famine relief, railroads and highways. They provided a surplus by creating a normal export of Indian crops which, when necessary, could be retained in India for famine relief. They reduced the hazards of climate by an immense development of irrigation, the world's largest, which today waters an area of close to 60 million acres, about 20 per cent of the total cultivated area of India and more than three times the irrigated area in the United States.[23] Finally, a system of advanced famine warnings and a program of efficient famine relief were worked out. Today all these measures are constantly in operation, for famine control is a continuing thing, requiring perpetual vigilance. Though people still may starve from poor diet and inadequate income, the wholesale and sudden diminution of the food supply below the normal amount does not any longer occur.[24]

The third step came with the control of epidemic disease. Western medicine first decreased the mortality from smallpox, and then gained some control of cholera, kala azar, plague, and similar diseases.

But an interesting thing about all these steps has been their alien origin and their noninterference with daily life. The Pax Britannica was an imposed peace. The control of famines was an alien control that depended on a governmental and financial structure, upon a

[23] Anstey, Vera: MODERN INDIA AND THE WEST. London, Oxford University Press, 1941, edited by L. S. S. O'Malley, pp. 270-71.

[24] The writer does not have full information on the recent famine in Bengal. Reports indicate, however, that it was a minor thing compared to the one-time famines that killed tens of millions in India. Furthermore, it was apparently due to the breakdown of transportation and relief contingent upon the special conditions of the war, and to politico-economic relations between the various provinces.

science and technology, that were generated and maintained by foreigners. The prevention of epidemics was another importation. Smallpox vaccination, for example, represented a simple and inexpensive technique that could be employed effectively on a mass basis by a small medical staff. With its aid smallpox can be eliminated in colonial areas, as the case of the Netherlands Indies proves. Cholera was more difficult. It seemed to require either the sanitation of all the villages of India or the yearly inoculation of all the inhabitants. But when it was discovered that the infection was spread mainly by pilgrimages to religious centers, it became possible to sanitate the pilgrim centers themselves and inoculate only the people going on these pilgrimages. In this way, by a combination of techniques and with a minimum disturbance of the Indian way of life, the cholera death rate was considerably reduced. Similarly, epidemics of kala azar were virtually eliminated by the use of antimony salts on a mass scale. In view of the emphasis in Western nations on the socio-psychic aspects of public health it is astonishing how much can be done *externally* in a backward country. But the gain has not depended on a great change in the texture of Indian life, and hence does not have any such change to rely on in the future. The local village still remains about as unsanitary as ever, the public apathy to health measures about as complete as ever, and the poverty almost as abject as ever.[35]

Though the reduction of India's mortality has been considerable, the rate still remains high. The expectation of life at birth is still only 32 years.[36] The infant mortality is still, in all probability, over 200.[37] There is thus a long way to go before the death rate falls to the low level achieved by Western nations. Probably a great deal

[35] Megaw, Sir John: "Medicine and Public Health" in Blunt, E. A. H. (editor): Social Service in India, Chaps. VI and VII.

[36] This is the expectation revealed by a life-table constructed by us for the period 1931-1941. The table was made by differencing the two censuses for certain provinces and states.

[37] The officially reported infant mortality averaged 161 during the period 1936-1940. Infant deaths, however, are probably more underregistered than births. The life-tables show a rate of about 211.

more can be done through the further control of epidemic disease and an attack upon the pervasive diseases — such as malaria, tuberculosis, ankylostomiasis, and malnutrition — which are still virtually untouched because their elimination requires considerable expense and basic social change.

Remaining a satellite nation, however, India has not developed a balanced economy and has consequently not achieved the internal structure that will motivate her citizens to reduce their fertility. To the extent that additional control of mortality is achieved without altering the fundamental conditions of Indian life, and without therefore greatly affecting fertility, the gap between births and deaths will continue to widen and the population growth to accelerate. This will tend to create an unstable demographic situation, because if the external and somewhat artificial support of the reduced mortality should be withdrawn, there will be a larger population to be affected by a suddenly increased death rate.

Early Fertility Decline Not Probable

Were fertility destined to decline shortly, one would expect the signs to be already manifest in the urban regions and upper classes, where such decline usually starts. On this hypothesis, the rural-urban fertility differentials in India were investigated, the ratio of children 0-4 per thousand women 15-39 being employed in lieu of more direct data. Starting with the 1931 returns the analysis revealed, as Figure 5 shows, a small but nevertheless definite differential.[18] It

[18] The percentage which the urban ratio constituted of the rural in India and in Chile and the United States was as follows:

	Per Cent
India	
Cities 500,000	68
Cities 50,000	82
Rest of India	100
Chile	
Cities 50,000	59
Rest of Chile	100
United States	
Cities 500,000	57
Cities 50,000	58
Rural Farm and Non-Farm	100

(Continued on page 270)

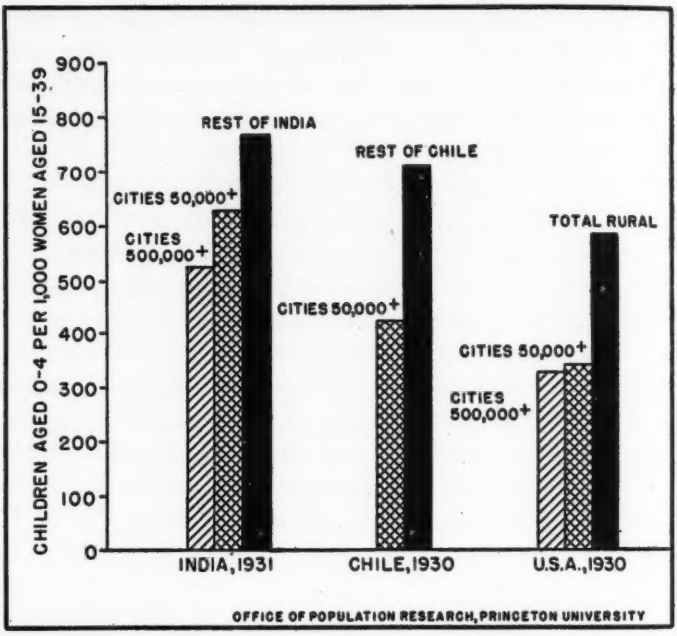


Fig. 5. Rural and urban fertility ratios in India, Chile, and the United States. (*See* footnote 18.)

appears, furthermore, that the large cities had a lower fertility than the smaller, and these in turn a lower fertility than the country. It looked as if the Western fertility pattern was conveniently and in the nick of time beginning in India. The next task then became to discover how fast this trend was progressing. To this end the data were assembled from 1891 to 1941. The results were contrary to what had been expected. As Figure 6 shows, approximately the same differential that prevailed in 1931 also prevailed in 1891. There

It is obvious that the last item in each case is not strictly comparable to the last item in the other two cases. Neither the "rest of Chile" nor the "rural farm and rural non-farm" in the United States is as rural as the "rest of India." But this lack of strict comparability tends to increase the rural-urban differential in India as compared with the other two countries. Therefore, the conclusion seems safe that in both Chile and the United States, the rural-urban differential has progressed farther than in India.

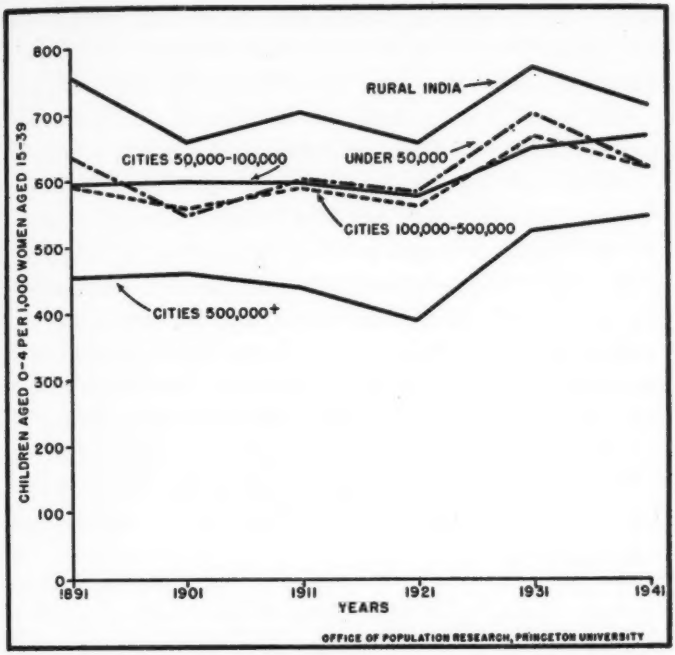


Fig. 6. Rural and urban fertility ratios in India, 1891-1941.

has been no tendency for the cities to inaugurate a sharp decline in the birth rate.[39]

Turning next to class and caste differentials, a bare hint can be gleaned from a very poor sample study made in connection with the 1931 census. The sample was so badly drawn and tabulated that only one conclusion seems safe — namely, that there is a bare suggestion of differential fertility as between farmers and nonfarmers,

[39] The chart also shows that the ratio for all types of regions has risen slightly. This result may not be due to an actual increase in fertility, but possibly to a tendency for the enumeration of children under 5 to improve faster than the enumeration of women in the reproductive ages. Our estimates of births indicate that fertility on the whole has shown no consistent tendency to rise or decline. "Rural India" in the chart is really all of India exclusive of the 90-odd cities used in our calculations. Since India in 1931 was 89 per cent rural anyway, India outside these 90-odd cities *is* extremely rural in the technical sense of the term.

professionals and nonprofessionals, and that the differences, though not so sharp or consistent, are in the same direction as in Western civilization. Another hint can be gained from our own analysis, as yet incomplete, of caste and religious differentials. These show that in general the priestly and learned castes have a lower fertility ratio than the agricultural castes, the interior castes a lower ratio than the exterior (untouchable) ones. The differences, however, are not consistent: they vary from province to province. Finally, with respect to religion, it is known that the fertility of the Hindus is lower than that of the Mohammedans, and the latter lower than that of the so-called Tribals. The Hindus are more literate than the Mohammedans, but they are also more rural. The Tribals are both less literate and less urban than either. There is every indication that all of these class and religious differentials are slight. They may, like the rural-urban differential, have existed for decades without much change. They may not indicate the commencement yet of a Western pattern.

Population Policy

If by "population policy" is meant a deliberate attempt to modify an existing demographic trend for some ulterior purpose, then three elements are involved: (1) the end to be attained, (2) a demographic change required to reach the end, and (3) some social measures designed to produce this change. Let us glance at each of these in turn with reference to India.

Among the most frequently mentioned goals for India are these: (1) more political independence, (2) greater per capita wealth, (3) wider popular education, (4) better public health, and (5) greater internal democracy. The second goal, greater wealth, is frequently considered to be a master means to many of the others, and demographic policies are frequently argued on the basis of it alone. But the goals, though interdependent, are clearly separate. They are also Western in character, although their application to

India by no means receives universal Western approval. For Indians they are national goals, and therefore in conflict with other types of goals. Many Indians would like to see India an independent nation, but not at the expense of their religion. Many would like to see India a wealthier nation, but not at the expense of their own relative wealth. Many would like to see India an educated nation, but not if it includes the lower castes. Many would like to see India a healthy nation, but not at the cost of higher taxes. Many would like to enjoy the privilege of climbing socially, but not by the extension of that privilege to persons beneath themselves. While, therefore, most Indians hold certain goals for India as a whole, they also hold other goals in terms of lesser but more immediate affiliations — such as caste, family, community, and church. In case of conflict, the latter seldom yield.

That India's population is already, or is becoming, a handicap in reaching her national goals seems fairly plain. With existing techniques and resources, the total per capita product, for example, would probably be larger if there were fewer people. This conclusion may seem to contradict the fact that certain nondemographic variables in India have been going ahead faster than population. Looking at a few indices of development — industrialization, education, and urbanization — we find that their growth has exceeded that of the population (*see* Figure 7).[20] Still, it may be maintained that the present or the potential density of the population may now, or may in the future, cause these trends to move more slowly than would otherwise be the case. Consequently, a cessation of the present growth rate would be a means to some of the ends mentioned above.

[20] In Figure 7 the Census definition of "urban" is used, embracing all places of more than 5,000 inhabitants. The definition of "literate" includes only persons who can read *and* write. The index of manufacturing production is taken, for the years 1913 to 1931, from Rolf Wagenfuhr's estimate, "Die Industriewirtschaft," *Vierteljahrshefte zur Konjunkturforschung*, Sonderheft 31, Berlin, 1933, p. 66. The change of the volume of production from 1931 to 1932 was estimated on the basis of a series of textile and paper production and the number employed in the iron and steel industry. Beginning with 1932 an index was estimated by computing the weighted arithmetic average of six different indices representing cotton, jute, steel ingot, pig iron, cement and paper production. The indices and the weights used are from *Capital*, July 24, 1941, Calcutta.

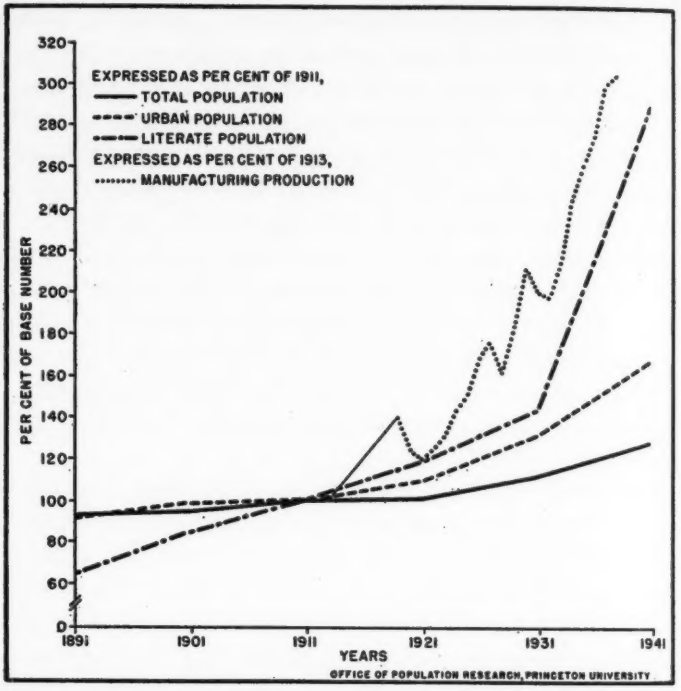


Fig. 7. Growth of total population compared with the growth of three indices of economic and social development — literate population, urban population, and manufacturing production. (*See* footnote 20.)

But what measures can be utilized to put this means into effect? The answer is extremely difficult. Deliberately to allow mortality to rise again would offend our humanitarian sentiments. To grant new territories to India would offend our political ideals. To encourage sufficient emigration would surpass our power.[21] About the only alternative left is the reduction of fertility, but again this offends the sentiments of many Europeans and Indians alike. Let us, however, examine this alternative further.

[21] It would be hard to induce some five million Indians to leave India every year, and it would be even harder to induce the residents of any region to take them.

There are two conceivable ways of reducing Indian fertility. One — the indirect way — is to stimulate social development to the point where India will become sufficiently modernized to engender private fertility control. The other — the direct way — is to speed the process by taking birth limitation directly to the people. The former implies more than merely allowing social evolution to take its course. It implies an attempt to facilitate and emphasize those elements of modernization that will be most likely to depress fertility — such as more education, more industrialization, and more social mobility. These things are so enormous and are instrumental to so many different ends, however, that their feasibility is likely to be decided on other grounds than population alone. They are, in fact, among the things *for which* we wish to reduce the rate of population growth. Moreover, even granting that their development can be somehow speeded up, the period of modernization would nevertheless permit a huge interim growth in numbers. For one thing, the death rate during the next few decades would probably continue to fall much faster than the birth rate. The latter would remain high for a while not only because of the previously mentioned lag, but also because of the effect which some of the modernizing changes themselves would have. For example, the taboo on widow remarriage would probably be modified. In Western eyes there is nothing more inhuman than this taboo, especially since, because of child marriage, many of the widows are quite young. Assuming that the taboo were abolished, and that the proportion of widowed women in India became as low as it was in the United States in 1930, there would be a net gain of 14 per cent in fertility.[22] Other changes — such as the improvement of maternal health and the reduction of sterility — might also tend to raise

[22] This result was obtained by assuming the same age-specific fertility for widows as for married women in India. If the number of Hindu widows in 1941 were reduced by remarriage to the proportion which they constitute in the United States population of 1930, Hindu fertility would rise by 15 per cent. If the same were done for Muslim widows, Muslim fertility would rise by 10 per cent. One reason for the greater fertility of Muslim women is the lesser stringency among them of the taboo on widow remarriage.

fertility. If, with the gap between fertility and mortality growing larger, the achievement of a Western-type demographic balance were to take 80 years, the interim population growth would be enormous. The same rate of increase as Europe experienced from 1850 to 1933 (a rate smaller than that of India during the last 20 years) would give India in the year 2024 a population of 750 million and a density of 482 per square mile. How fast the modernization process can be speeded up depends mainly on India's role in the post-war economy, but it seems hard to believe that it can be done rapidly enough to avoid an enormous growth.

The direct measures also give little hope of early success. In the first place, if death prevention itself must be introduced by remote control with a minimum disturbance of the Indian way of life, it can be imagined how delicately birth prevention must be handled. A partially alien government places itself in a vulnerable position if it tells the subordinate people to curtail their numbers, for in the heat of controversy this may be construed as an attempt to limit the power and freedom of the nation. And since "overpopulation" is a relative matter, it can be taken as merely an excuse for not effecting other improvements of a nondemographic kind. In the second place, our own taboos prevent diffusion of our birth limitation patterns. Despite our private behavior we have generally adopted a public policy of suppression in this matter. Finally we encounter in India a social system that for many centuries has been geared to produce high fertility — embracing a familistic religion and a caste order which encouraged early and universal marriage, early and copious fertility.[28]

Forgetting these circumstances, the unwary reformer is tempted to believe that if a quick, easy, inexpensive, and semi-permanent contraceptive could be found which, like an injection or a pill, might produce harmless sterility for six months or a year, it could

[28] Davis, Kingsley: Changing Modes of Marriage: Contemporary Family Types *in* Becker, Howard and Hill, Reuben (editors): MARRIAGE AND THE FAMILY. Boston, Heath, 1942, pp. 93-100.

be brought to the Indians much as smallpox vaccination has been brought to them. This belief is tempting because from a purely physical point of view birth control is easier than death control, and because the Westerner thinks that since population is a handicap to a better standard of living in India, it should be possible to acquaint the people with the fact that by this means they can improve their personal circumstances. There is just enough truth in this view to justify some sort of birth control program. But the sociological barriers are so great that such a program *alone* would probably have no effect, and might in fact be a boomerang. It can be more effective, in all probability, if it is accompanied by the indirect method of speeding up modernization as fast as possible. It should also be pursued with the greatest care to fit into the actual motivations and circumstances of the people, and to this end research might be profitable. For instance, what motives could be seized upon to overcome the disesteem into which an Indian wife falls who does not have children early in her married life, or the hard lot of a widow who happens to lack sons, or the anxiety of a man who reaches middle age without male progeny. Some of these institutional compulsives to high fertility would be less rigid if it became established that death to any particular child were less likely — if, that is, the curse could be removed from birth control by transforming it into a positive means for aiding child health.

Conclusion

If we look candidly at the probable future, we must admit that the differential diffusion of Western culture to India and the creation there of a semi-colonial economy have produced an unstable demographic situation that promises to get worse before it gets better. India has remained predominantly rural, illiterate, religious, and immobile — with a resulting high fertility. At the same time she has acquired a stable government, a commercial economy, and a public health system largely controlled by outsiders — with a con-

sequent reduction of her death rate. The discrepancy between the two is causing a rapid population growth that is in a sense artificial, for if the alien controls over mortality should slip away — if, for example, political strife should arise, if famines should return, if epidemics should get out of hand — the mortality might be greater than ever before, precisely because the population would be larger. In order to avoid an otherwise inevitable and perhaps catastrophic rise in mortality, India's industrial revolution must be accomplished as quickly and as thoroughly as possible. Even so the population is likely to increase by hundreds of millions during the next century. Yet because the industrial and the demographic revolutions are apparently inseparable, a rapid and balanced modernization (with a sociologically intelligent program of fertility control integrated with it) seems the only feasible alternative in ultimately halting the detrimental rate of population growth.

AGRICULTURAL POPULATION AND RURAL ECONOMY IN EASTERN AND SOUTHERN EUROPE[1]

WILBERT E. MOORE

AN arc dissecting the map of Europe, with a center lying in the lower North Sea and a radius of 800 miles, would almost exactly divide the relatively prosperous, industrial economies of the North and West, and the relatively depressed and predominantly agrarian economies of the South and East. To the east of this line lies a clear-cut belt of countries between the industrial West and the rapidly industrializing Soviet Union. South of this line are Italy, Portugal, and Spain: countries intimately involved in the early period of Western European commercial expansion, but largely by-passed by the Industrial Revolution.

Almost all of the Eastern European countries are either "succession states" established by the peace treaties following the First World War, or states whose territorial extension was profoundly modified by post-war settlements. Roughly from north to south they include: Estonia, Latvia, Lithuania, Poland, Czechoslovakia, Hungary, Roumania, Yugoslavia, Bulgaria, Albania, and Greece. Although the two northern Baltic States (Estonia and Latvia) fall within the Scandinavian sphere in some respects, their inclusion in this survey is justified by their position as small succession states, faced in the interwar period with major problems of economic adjustment. Finland, the northernmost country of the north-south marginal belt, was not a succession state in the same sense, and is even more Scandinavian in economic and demographic characteristics. Considerations similar to those applying to the northern Baltic

[1] The materials for this paper are drawn from a forthcoming study, tentatively entitled *Marginal Economies of Europe*, prepared under the auspices of the Office of Population Research, Princeton University. The research has been carried on in cooperation with the Economic, Financial, and Transit Department of the League of Nations, and made possible by a financial grant from the Carnegie Corporation. The writer's indebtedness to these organizations implies no responsibility on the part of the latter for views here expressed.

States warrant the inclusion of Czechoslovakia, which would be split by our imaginary circle as indeed it is in economic fact.

It is not exactly accurate to imply that between the Northwest of Europe and the South and East "there is a great gulf fixed," for the gradations on numerous bases of comparison are fairly regular, and as between neighboring territories ordinarily moderate. But if the regions are considered as units, the differences are both numerous and substantial. Demographically, the former countries have low birth rates and face a period of population stability or decline. The latter peoples are still expanding rapidly, and bid fair to challenge the numerical superiority of the West. Politically, the nations of the North Atlantic seaboard, despite internal and external disturbances, have shown a measure of political stability scarcely equalled on the Southwestern peninsulas, and not even approached in the notoriously troubled Balkans. Economically, the Western industrial societies face problems of distribution for technologically developed production, whereas the Eastern and Southern agrarian societies have struggled unsuccessfully to achieve a production adequate to yield a level of living approximating that of the West.

It is in fact the generally low level of living by Western European standards that constitutes the most pervasive difficulty besetting what we may call the "marginal" economies. This low level of living has been extensively documented in a forthcoming study,[2] on the basis of a number of indexes. With the occasional and minor exceptions of Estonia, Latvia, and Czechoslovakia, for reasons already noted, these indexes uniformly place the Eastern and Southern countries below the European average, and *a fortiori* below the levels prevailing in the North and West. This general conclusion is amply supported by comparable studies,[3] and may be taken as a fundamental datum for the present analysis.

[2] Moore, Wilbert E. and Kozlik, Adolf: *Levels of Living in Interwar Europe, with Particular Reference to Agricultural Production*, to be published by the League of Nations.

[3] For example, *see* Clark, Colin: THE CONDITIONS OF ECONOMIC PROGRESS. London,

(Continued on page 281)

The juxtaposition of low levels of living and a constantly expanding population to be supported with whatever resources may be available points to a greater economic problem in the future. The problem of course does not consist in these factors alone, but rather in the significance attached to them within the regions here considered. The eastward spread of Western standards and levels of aspiration has been steady, and has been given added impetus by a quarter century of growing contacts in war and peace. It is therefore no merely academic exercise in "welfare economics" to point to the relative poverty prevailing in Eastern and Southern Europe. The problem is a concrete one because it is recognized as such by a growing proportion of the inhabitants in these regions.

It is the relation between the demographic and economic circumstances in Eastern and Southern Europe which forms the central problem of this paper. More specifically, an attempt will be made to relate agricultural populations to productive resources and to estimate the extent of the redundant population under certain assumptions; to examine the institutional and economic framework of agricultural production; and to draw certain inferences for the possible future course of economic development in these regions.

People on the Land. The level of agricultural production and the income of the agricultural population provide at least indirect measures of general economic development in any society, and naturally a largely direct measure in a predominantly agrarian society. In view of the high proportion of the population dependent on agriculture in the Eastern and Southern European countries here under consideration (the proportion is over 40 per cent in all of these countries except Czechoslovakia) and the low per capita level of production, these areas are sometimes said to be suffering from "agricultural overpopulation." It is worthwhile to examine briefly

Macmillan and Co., 1940; Warriner, Doreen: Economics of Peasant Farming. London, Oxford University Press, 1939.

precisely what this may mean, and what significance it may have for future economic prospects in these areas.

The conception of overpopulation as a greater number of people than the economy can support in some absolute sense is clearly untenable. In this same absolute sense, those who are alive are clearly not part of the surplus. To discuss overpopulation at all some standards of judgment must be introduced: health and longevity, full employment, or a "minimum" level of living. In all of these cases the surplus may be viewed in relation to existing technology and social organization, or in relation to some hypothetical or ideal modification of the social system. In any event, the level assumed as a standard is as much a variable and critical factor as any other.

Perhaps the simplest procedure for estimating overpopulation is to proceed from some "reasonable density" of agricultural population in terms of agricultural land, any higher densities representing the amount of the surplus. Unfortunately, the simplicity of the measure is offset by its arbitrariness. It not only neglects completely the economic and technological level, but also faces the problem of relating population to comparable areas. Thus, an agricultural area made up almost entirely of rough pastures can support a much smaller population than one devoted to horticulture.

The latter difficulty may be partially, but not completely, overcome by converting various types of land utilization to a common basis. Such a procedure was used to translate agricultural land into "arable equivalents."[4] When related to the population dependent on agriculture, these converted land areas yield density figures of considerably greater comparability than would otherwise be possible. Aside from the not insignificant technical problems of determining the appropriate value ratios among the various types of land use, the procedure assumes that either the productive value of arable

[4] The method is based upon adaptations of conversion ratios suggested by J. Poniatowski, cited in International Institute of Agriculture, POPULATION AND AGRICULTURE, WITH SPECIAL REFERENCE TO AGRICULTURAL OVERPOPULATION, Technical Documentation for League of Nations, European Conference on Rural Life, 1939, Publication No. 3, (Geneva: 1939). The sources and data used will be published in Moore, *op. cit.*, Appendix I, Tables 1 and 2.

land is equivalent in all regions or that the differences can be offset by technological developments. It is clear, for example, that even climatic disadvantages and low soil fertility can be offset by improved technology, although it is equally clear that the capital and managerial ability required operate to the disadvantage of the poorer regions.[5]

The densities of agricultural populations, as shown in Figure 1, are chiefly significant for what they do *not* reveal about levels of living or economic opportunity. Thus, although the regions of Eastern Europe have high densities, so do the Low Countries, and considerable portions of Germany, Switzerland, and the Scandinavian Peninsula. In other words, high densities of agricultural population do not necessarily mean low product per capita. At best, comparisons are valid only within regions of similar economic structure.

In an attempt to find some meaningful numerical expression for the surplus population of the marginal economies, it is here proposed to use a variant of the method of a "reasonable" level of living. Available data on the per capita value of agricultural production[6] allow the selection of some per capita value as a "standard," and the computation for any area of the number of people, in view of existing production, who could be supported at that level. By this procedure, an overpopulated area is one which falls below the selected per capita standard, and the amount of the surplus is measured by the difference between the actual per capita level and the standard.

Because of the impressive differences between prosperous and poor regions of Europe, the selection of a "reasonable" standard is difficult. For example, the Danish per capita level, which is the

[5] This point has been made, with perhaps undue emphasis, by Huntington, Ellsworth: Agricultural Productivity and Pressure of Population. *Annals* of the American Academy of Political and Social Science, 198: 73-92, July, 1938.

[6] The basic data, together with an explanation of the methods of computation, are given in Moore and Kozlik, *op. cit.*

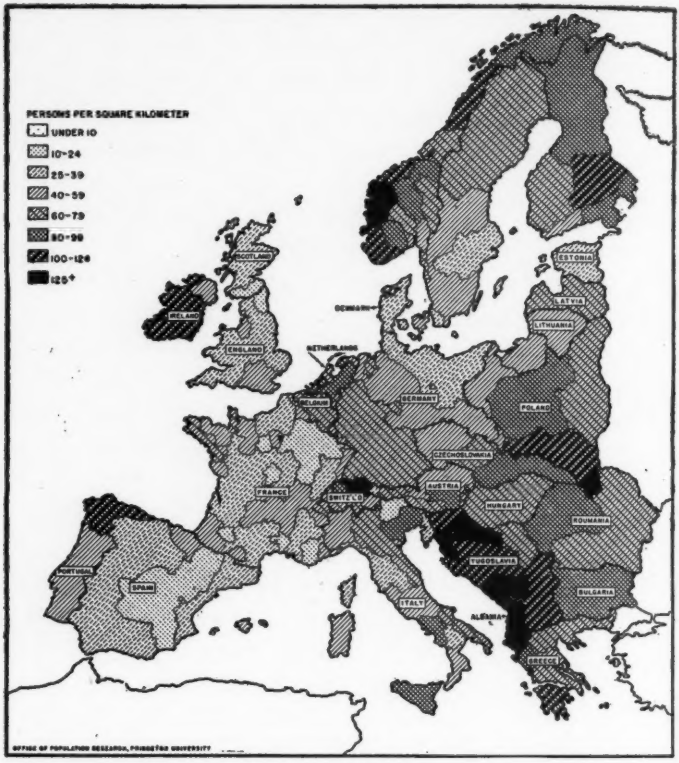


Fig. 1. Density of agricultural population per square kilometer of "arable-equivalent" agricultural land.

highest in Europe, reflects a highly specialized and intensive agrarian regime, dependent on nearby urban markets. In no meaningful sense would such a level be reasonable for Sub-Carpathian Russia or Bessarabia. It does appear, however, that the general European average is not an excessively high standard, since it is approximately that to be found in Ireland, Estonia, and Czechoslovakia.[7]

[7] Of the countries in Northern and Western Europe, only Ireland and Finland fall below the European average, whereas in Eastern and Southern Europe only Latvia and Czechoslovakia are above the average. See *ibid.*, Appendix V, Table 2.

Assuming existing production and the European average per capita distribution of product, surplus (or in some cases, deficit) populations are computed. Figure 2 shows these surpluses or deficits expressed as percentages of the actual agricultural population. The range is from a deficit of around 10 per cent in Latvia, which is confirmed by an agricultural labor shortage, to a surplus of over 77 per cent in Albania, which has the lowest per capita level of agricultural production in Europe.[8] Under these assumptions the Eastern region has a surplus agricultural population of 45 per cent, while the Southwestern peninsulas have a redundant farm population of 23 per cent. This means that with no increase in production a substantial proportion of the rural population would have to find other support in order for the remainder to achieve a European average level, or, approximately that of Estonia.

It may, however, be objected that it is precisely the inefficient state of agricultural technology which is the crux of the problem in the Eastern and Southern agrarian regions. From this it would follow that an improvement in agricultural production would provide the necessary means for supporting the farm population at some "reasonable" level. The possibilities of organizational and technical improvement are discussed below, but at this juncture the hypothesis noted may be tested by the expedient of noting the effect on the computed surpluses were the land utilization as efficient as in some more prosperous area.

As in the case of the selection of a "reasonable" per capita level of production, the choice of a standard of land utilization is hazardous, and of course somewhat arbitrary. The hazard is partly removed by the calculation of comparable land areas, as already noted. The problem is essentially that of selecting a standard of land utilization with some chance of being achieved if appropriate measures are taken.

[8] Since, by the standard selected, nearly all of the Northern and Western countries would be underpopulated, Figures 2 and 3 show the results only for those countries considered in this paper.

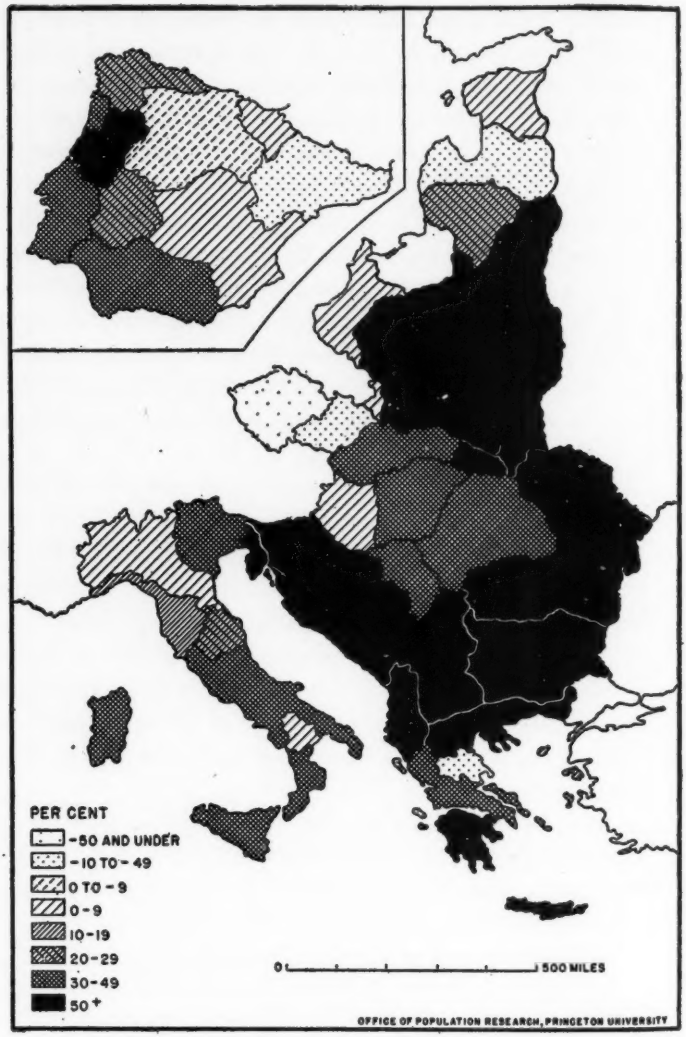


Fig. 2. Surplus agricultural populations in Eastern and Southern Europe, assuming existing production and European average per capita distribution.

The standard here selected is that of the French agricultural productivity per hectare of "arable-equivalent" agricultural land. Without arguing the case in detail the following considerations seem to support the selection: (1) France represents an extensive agricultural area, with fairly wide ranges in climate, soil composition, and the like; (2) in comparison with agricultural organization in other Western European countries, French farms are not heavily capitalized; (3) French agriculture is fairly "balanced," and does not depend on an unusually favorable external market; (4) finally, French productivity per hectare is lower than that of any Northern or Western European country except Finland, and also lower than that of Czechoslovakia and Latvia. In fact, the French productivity per area is only slightly above the European average.

Under the dual assumption of a standard product (based on agricultural land area and French productivity per hectare) and a European average level of per capita distribution, a new surplus population is computed. Naturally, the surplus is lower than in the previous computation wherever the effectiveness of land utilization is below the French standard. The percentages of deficits or surpluses remaining after this additional allowance are illustrated in Figure 3. As may be seen from that map, improved land utilization would reduce, ***but would not eliminate,*** the calculated surpluses. Major portions of Italy, Portugal, and Spain could support their agricultural populations at the European average, given more effective use of the soil. For Eastern Europe as a whole, "optimum" conditions as here defined would reduce the calculated surplus population from 45 to 35 per cent. Figure 3 shows more clearly than Figure 2 the regions of acute poverty on the land.

The calculated percentages of redundant population are high, but do not seem unduly so in view of the moderate standards selected. Indeed, the population data used express the situation around 1930, and production figures the 1931-1935 average. With respect to the present time, or the situation immediately preceding the Second

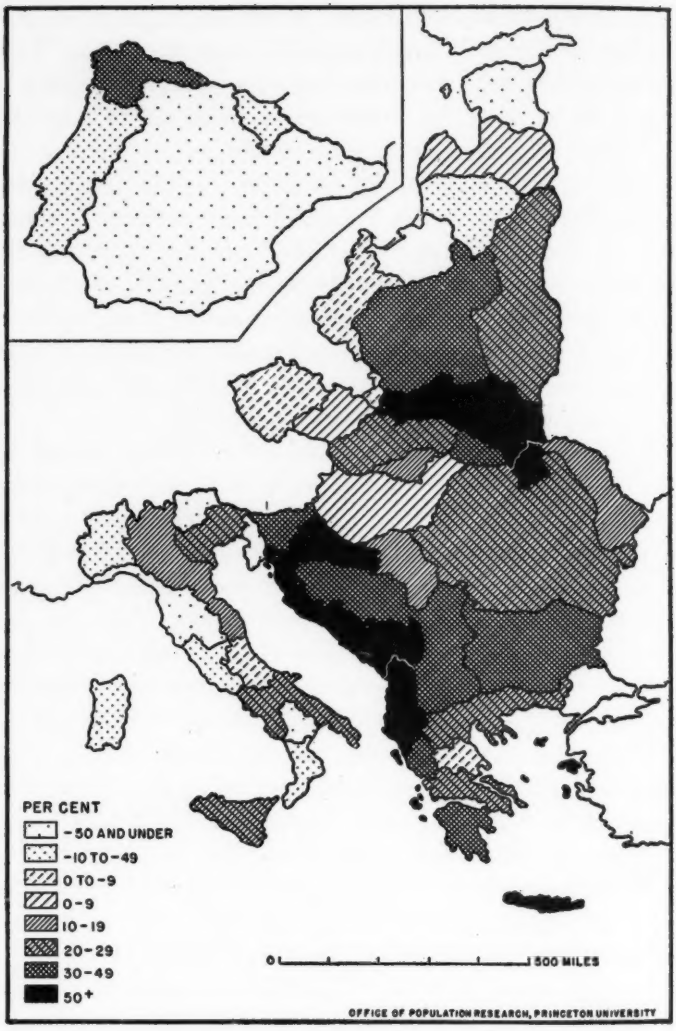


Fig. 3. Surplus agricultural populations in Eastern and Southern Europe, assuming "standard" production and European average per capita distribution.

World War, the agricultural populations are certainly larger, whereas available evidence indicates no commensurate increase in production. The transfer of workers to industry and trade has been slow, while rural birth rates have remained high. Under the assumptions noted, therefore, the estimated surpluses would appear to be unduly conservative rather than the contrary.

The problem of supporting a large population on the land is not one that will probably disappear in the immediate future through demographic changes. Eastern, and to a lesser extent Southern, Europe are in a period of population growth comparable to that in Western Europe during the last century. Assuming the continuance of past trends in birth and mortality rates based upon European experience as a whole, and disregarding losses from the present war, the eleven countries we have included as Eastern Europe would show a total increase in population by 1970 amounting to almost 15 per cent more than the population of 1940.[9] Under the same assumptions, the three countries of Southern Europe would show population increases of about 12 per cent over the same period.

In certain respects the problems of a growing population will be made even more acute in view of the projected changes in the *composition* of the population attendant on increasing size. Declining fertility will slow the rate of growth as compared with past decades, but growth will continue to 1970 and beyond. Moreover, declining fertility will not affect the size of the labor force at least until around 1960. The labor force of 1955 is already born. On the other hand, declining fertility coupled with an earlier decline in mortality will *increase* the proportion of the total population in working ages. Thus, while the projected increase of the total population of Eastern Europe by 1970 amounts to about 15 per cent, the number in the working ages will increase by almost 28 per cent; in Southern

[9] The projected populations, and subsequent references to projected population composition, are derived from Notestein, Frank W.; Taeuber, Irene B.; Kirk, Dudley; Coale, Ansley J.; and Kiser, Louise K.: THE FUTURE POPULATION OF EUROPE AND THE SOVIET UNION: POPULATION PROJECTIONS, 1940-1970. Geneva: League of Nations, 1944, Appendix IV.

Europe the potential labor force in 1970 will be 24 per cent larger than in 1940 while the whole population is likely to increase by about 12 per cent.

From the foregoing it is clear that the probable future trends in population size and composition in Eastern and Southern Europe signify a "favorable" ratio between active and dependent population, but an increasing strain on the economic organization not only to provide sufficient production to support an increasing population but to provide a disproportionate increase in economic opportunity in the form of employment for the labor force.[20]

Although the foregoing projections could not distinguish the growth patterns of agricultural and nonagricultural populations, their significance for agrarian economies is clear. Even were future increases only proportional to present ratios between rural and urban populations, the inelasticity of agricultural resources and of demand for agricultural products would impose the larger burden on land utilization. Two further considerations serve to multiply that burden. One, already noted in some detail, is that by any one of several standards the marginal economies are already faced with an agricultural overpopulation of substantial proportions. The second is that the projected declines in birth rates will undoubtedly take place mostly in urban and industrial centers, and only gradually extend to rural areas. If patterns observable elsewhere are followed, in other words, most of the projected increases in population will be contributed by the already submerged agricultural population.[21]

On the basis of the foregoing considerations it seems safe to assert

[20] See *ibid.*, especially Chap. V, "Manpower."

[21] War losses in the Eastern European countries and Italy, and the losses attendant upon civil war and slow reconstruction in Spain, may reduce the total number of people who must seek support in the post-war period. There is no *a priori* reason, however, for supposing a favorable effect of such losses on man-land ratios. The destruction of agricultural capital—in some cases including orchards, vineyards, and even crop lands—will probably offset any reduction in the number of cultivators. In other words, even if somewhat fewer than the projected number of people will require support, that support must be derived from substantially depleted resources. *See ibid.*, Chapter III, "The Demographic Effects of War and Their Relation to Population Projections," and pp. 167-168.

that for the present and foreseeable future the relation of population to land in Eastern and Southern Europe places great significance on the organization of agricultural production.

Property and Labor. The prevailing modes of land tenure and the position of agricultural laborers in Eastern Europe owe much to the agrarian reforms undertaken in the inter-war period. Some areas in Eastern Europe have experienced earlier reforms as well, while the Southern European countries have had no redistribution of land of comparable extent. Although the reforms in Eastern Europe were in many cases rather sweeping, in each of the countries the actual property and labor systems represent the coexistence of results of quite disparate historical influences. Indeed, the property systems in all of the agrarian economies are extremely complex.[28] However, if the agrarian reforms did not create a uniform property system, they did tend in a common direction: the spread of individual peasant proprietorship at the expense of large estates.

Were the statistical data available, it would be helpful to know the comparative situation in various Eastern and Southern European countries with respect to the distribution of *properties,* that is, whether a substantial proportion of the area of agricultural land is owned by a small number of individuals, or whether private ownership by actual cultivators is widespread. The available data allow such a comparison only for the distribution of *holdings,* that is, whether the land is predominantly farmed in small units, or whether the area under the direct supervision of the cultivator is frequently very large. The distribution of holdings is a fair indication of property distribution only where tenancy is not widely developed. The division of estates into a number of small tenancies increases the distribution of holdings without affecting the concentration of property rights.

Figures 4 and 5 show the distribution of holdings in several size

[28] A somewhat detailed and systematic review of property and labor systems in these areas will be presented in the previously cited *Marginal Economies of Europe.*

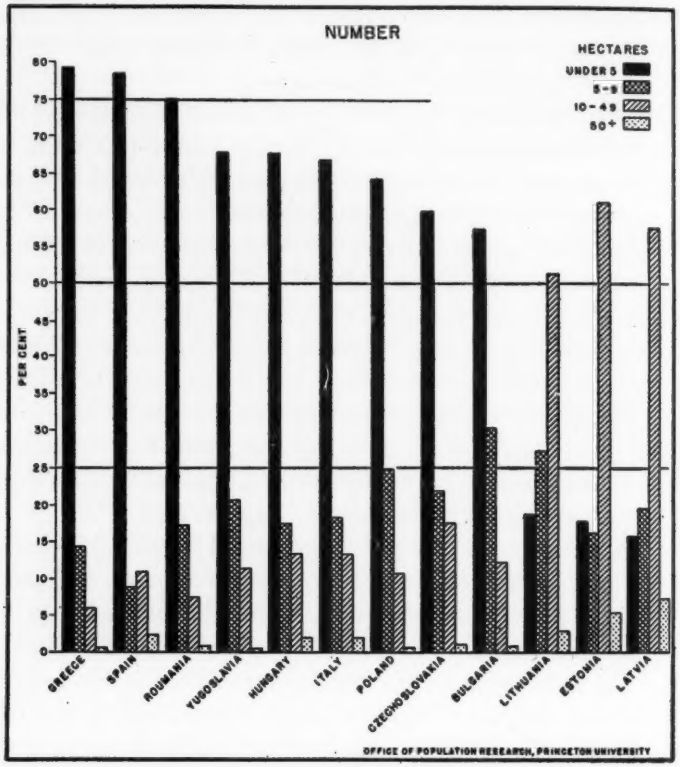


Fig. 4. Distribution of the number of agricultural holdings by size in Eastern and Southern Europe.

categories, both by number of holdings and extent of area.[18] The large proportion of very small undertakings (under 5 hectares) is marked in all of the countries considered except the Baltic States, where unusual attention was given in the agrarian reforms to the establishment of medium-size farms. A similar distribution in these states is evident in the comparison by area of lands in the several groups. Roumania, Greece, and Spain represent the opposite ex-

[18] Based upon data in *ibid.*, Table 5.

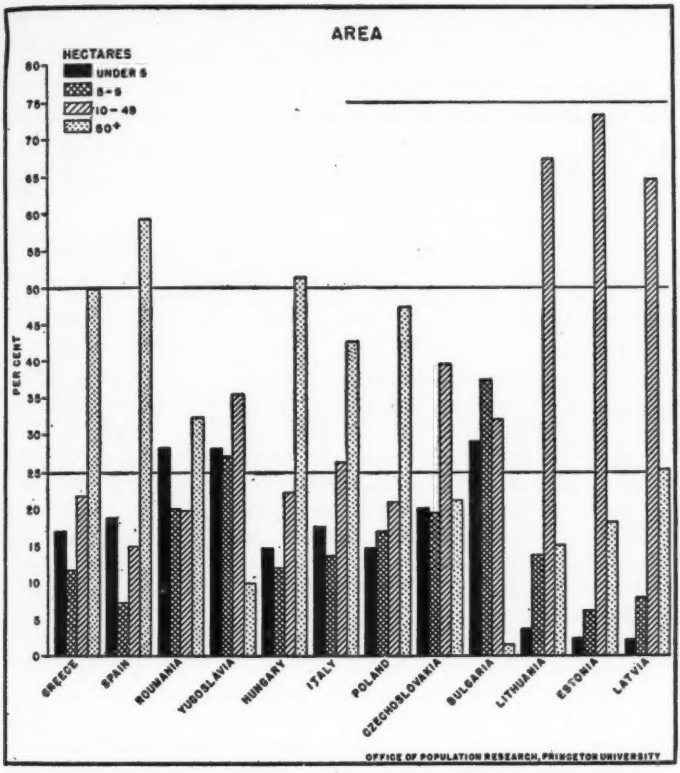


Fig. 5. Distribution of the area of agricultural holdings by size in Eastern and Southern Europe.

tremes with three-fourths and more of the holdings under 5 hectares in extent. Were genuinely agricultural holdings under one hectare included, the proportion of small holdings would be even higher in Spain and Italy would rank in the highest group. Of the countries with a high proportion of very small holdings, only Italy, Hungary, and Spain have also an appreciable number of large holdings. The data by area (Figure 5) show that in Hungary and Spain more than half of the agricultural area is held in units over 50 hectares in extent,

while Greece, Italy, and Poland have just under one-half of the farm area so held. In all of these countries except Hungary, where tenancy is rare, the concentration of land in large holdings substantially under-represents the concentration of property. A quite different situation prevails in Roumania, Bulgaria, and Yugoslavia, which are countries of small peasant holdings largely owned by the cultivator.

Certain conclusions emerge from the statistical data on holdings and from available descriptive evidence on property, tenure, and the division of labor.

(1) In most of the countries under consideration a majority of the cultivators have holdings so small as to impose stringent limitations on the amount of income for the farm family, and this situation is further accentuated by the virtual impossibility of substantial increases in self-capitalization. Since the produce from these small holdings will scarcely support the cultivator's family at the subsistence level, increased productivity through greater capitalization cannot be expected from the investment of savings. Moreover, the size of farms limits the amount of capital which could be economically employed under any conceivable circumstances.

(2) Although in a few countries the very small size of the majority of holdings is partially a function of a highly unequal distribution of land—this is notably true in Hungary, Italy, and Spain, and in some parts of Poland and Portugal—in Southeastern Europe generally it represents the results of continual division of holdings in view of a rapidly expanding population without many alternative means for support. The process of successive subdivision is generally facilitated by the rule of inheritance requiring equal division in kind among heirs, coupled with the reluctance or inability of peasants to secure even the limited number of commercial or industrial jobs. Subdivision through successive generations, coupled with an original dispersion of cultivated strips originating in the feudal agrarian organization, has resulted in "parcellization" into scattered tiny plots. Few of the agrarian reforms effected any appreciable consolidation, and indeed the reforms frequently parcelled out unified estates into scattered allotments. The principle of equality of benefits, common to the feudal agrarian organization and to most of the subsequent institutional modifications, has thus often been served at the sacrifice of rational productive organization.

(3) Wherever a preponderance of small holdings is accompanied by widespread tenancy, which is especially the case in Italy and Spain, the small returns from minute undertakings are further reduced by the rent in cash or kind payable to the landlord. Although the disadvantageous position of the peasant may be offset somewhat through partial capitalization, management, and possibly marketing by the landlord, in which case the cultivator becomes practically a worker paid in kind, this situation is rare in the countries here considered. Ordinarily therefore the tenant would benefit from a redistribution of property rights that did not at all affect distribution of holdings.

(4) The position of the landless farm worker is relatively unfavorable in all Eastern and Southern European countries, but the problem of his support is most acute not in those countries where large estates are common but rather in the countries where the family farm is the usual agricultural undertaking. In the former countries the farm worker may have little or no chance for economic advancement, and may be placed in a position of complete personal dependency on farm employers. But his security is considerably greater than that of the landless worker for whom employment opportunities are meagre without migration or attachment to some more fortunate kinsman.

(5) Finally, and following from the foregoing considerations, it is clear that the institutional organization of agriculture in Eastern and Southern Europe places a number of strong structural impediments to improved efficiency and increased production. These impediments include the small size of holdings, their frequent scattering in tiny plots abetted by subdivision through inheritance, the difficulties in self-capitalization, and, in some cases, tenancy arrangements that not only drain off part of the cultivator's returns but limit the tenant's initiative and ability to improve his methods.

These institutional considerations lead directly therefore to an examination of the economic and technological level prevailing in peasant agriculture.

Economic and Technological Level. Perhaps the outstanding characteristic of the economic organization of agriculture in the areas under consideration is that of relatively low capitalization. This is especially clear in the case of what can be roughly distinguished as variable costs, such as commercial fertilizers, provisions for grading and semi-processing, and the like. It is less evident in

the case of relatively fixed capital, such as land, buildings, and farm animals.[34] Low capitalization of the latter variety is evident in the typically small holding managed by the cultivator, and the low expenditure for irrigation, drainage, or other methods of increasing the fertility of the soil. But very small holdings may be over-capitalized *in ratio to the area of land cultivated*. This over-capitalization is especially true of buildings, equipment, and draught animals. In a sense, the peasant's fixed capital in equipment is too large because his capital in land is too small. And far from accumulating a capital reserve or increasing soil productivity through increased variable costs, the cultivator may steadily deplete soil fertility by attempting to get the highest possible yield at the lowest possible cost.

The level of agrarian technique in general tends to hasten the process of capital depletion. Tools and equipment are frequently more limited and primitive than the economic situation as such would impose. Plowing is customarily too shallow, and without regard to the possibility of erosion. Yields on cultivated lands are low, while fairly large areas of arable land are annually left in bare fallow that adds nothing to the productive value of the soil but at best simply postpones the day of exhaustion.[35] Even the value of manure is not universally understood, and in any event low livestock populations limit the supply.

The customary view of peasant self-sufficiency would lead one to expect a diversified type of subsistence farming. The small domestic markets in many of the states here considered, together with poor market facilities and inadequate means of storage on the farm, would seem to confirm this view. Yet one-crop commercial agriculture, chiefly in the form of extensive cultivation of grain crops, is

[34] *See* International Institute of Agriculture: The Capital and Income of Farms in Europe as They Appear from the Farm Accounts for the Years 1927-28 to 1934-35. Technical Documentation for League of Nations, European Conference on Rural Life, 1939, Publication No. 5, Geneva, 1939.

[35] With respect to yields, *see* Moore and Kozlik, *op. cit.*, Appendix V, Table 3, illustrated in Figure 10 in that study. For further discussion and data on areas in fallow, see Moore, *op. cit.*

actually the prevalent mode of farm production.[36] The explanation for this seemingly anomalous situation lies in the fact that most of these regions are operating in a commercial or market economy, however poor may be their organization to facilitate production and exchange. A steady rise in the demand for manufactured goods has taken place in the virtual absence of domestic industry. Thus, crops are grown which will get ready and convenient sale in domestic and international trade. Failing rapid transportation or the capital for domestic processing, the market organization is necessarily geared to the handling of cereals.

Now this general situation means that the peasant's ability to intensify production is limited by lack of capital, and that product diversification would be at the expense of what little marketable surplus he has to exchange for manufactured products. Thus, the institutional framework, the economic organization of productive enterprise and the level of agrarian technique provide a closely woven net of restrictions upon increased production in agriculture.[37]

Under the institutional and organizational conditions previously outlined, the dynamic situation gives little grounds for optimism with respect to the future economic position of the Eastern and

[36] Obviously agriculture in Eastern and Southern Europe is not exclusively devoted to cereal production. However, the low diversification is evident from the small proportion of livestock products in total agricultural production. All of the countries except Estonia, Latvia, and Czechoslovakia rank well below the European average (about 60 per cent). The range in Eastern and Southern Europe, exclusive of the countries noted, is 29-59 per cent, while the range in countries of Northern and Western Europe (exclusive of France) is 71-93 per cent. (*See* Moore and Kozlik, *op. cit.*, Appendix IV, Table 1.) For a general survey of the extent of diversification in Europe *see* International Institute of Agriculture: Conditions and Improvement of Crop Production, Stockraising, and Rural Industries. Technical Documentation for League of Nations, European Conference on Rural Life, 1939, Publication No. 7, Geneva, 1939.

[37] Within the existing economic framework an increase in agricultural production would not imply a correlative increase in the peasant's income. The present low level of living in the nonindustrial states is accentuated by the price spread between the peasant's income from agricultural produce and his outlay for manufactured products. This arises both from the small domestic market for agricultural products and from the small supply of manufactured goods produced by domestic industry. Since the demand for the products of agriculture is relatively inelastic even under favorable economic conditions, increased farm production may simply further depress agricultural prices and add little to the real income of the cultivator.

Southern European peasant. The widespread prevalence of farm indebtedness indicates not only that agricultural production is poorly capitalized, but that far from accumulating capital the peasant is frequently in the position of steadily depleting his resources, and borrowing to postpone the time of complete insolvency. In fact, whether the capital depletion takes the form of soil exhaustion and obsolescence of equipment or the form of growing indebtedness, it is clear that the process is likely to be a spiral that is escaped only by means of capital originating outside of the agricultural organization.

Again, the previously noted restrictions on increased production result in the perpetuation of inefficiencies. Even if one could assume an inherent dynamic toward improved technology and increased production, which is not at all uniformly true in peasant economies, the network of institutional and organizational limitations would stringently restrict economic rationalization. This is not to say that no significant changes have taken place during the recent past, or that no changes may be predicted for the future, but only that the pace of change is slow and the results in any generation likely to be minor. The European peasant economies are partly in competition with other agrarian regions, and in any event are in a position allowing ever easier comparison with more prosperous areas. It follows that the economic disadvantages imposed by existing circumstances tend to be steadily increased rather than reduced. If a problem with respect to relative economic position now exists, its proportions are likely to grow in the absence of fairly fundamental change in economic organization.

The foregoing conclusion is given greatly added emphasis by the demographic situation as previously outlined. Nearly all of the agricultural regions here considered have a labor supply greater than can be profitably employed under existing conditions. Where the worker is landless the result is overt unemployment; where the worker has a small plot of land "hidden" unemployment is wide-

spread. The population of these areas, and especially the farm population, is increasing rapidly, so that there are steadily more people to support within a system where both labor demand and productive organization are extremely limited.

The summary, "too many people, too little land," is no piously meaningless phrase when applied to Eastern and Southern Europe so long as the level of popular aspiration is high and rising, and the means for fulfillment effectively barred. The present analysis is incomplete, but if its results are substantially correct, no purely agricultural solution would seem to offer much hope for bringing increased prosperity to these regions. Prosperous farmers in Europe are in industrial regions and sell their products in urban and industrial markets. The present study suggests that the association is something more than historical accident, and that the "marginal" economies can be markedly improved only by extensive industrialization.

PROSPECTS FOR POPULATION GROWTH IN THE NEAR EAST

ERNEST JURKAT[1]

CHARACTERIZATION OF THE POPULATION

THIS paper will deal with prospects for population growth, as far as they can be derived from available information, in Turkey, Iraq, Iran, Syria, Palestine, Trans-Jordan, and Arabia. These countries cover an area of about 5.7 million square kilometers. That is more than the 5.4 million square kilometers covered by Europe without European Russia. Forty-seven per cent belong to Arabia, 29 to Iran, and only 24 to Turkey, Iraq, Syria, Palestine, and Trans-Jordan.

The total population living in this region that is greater than the area of Europe amounts to about 50 million, or to only one-eighth of the population of Europe without Russia. More than half live in Turkey, Iraq, Syria, Palestine, and Trans-Jordan, 30 per cent in Iran, and less than 20 per cent in the countries of Arabia. The order of the countries according to population size in the middle 1930's was as follows: Turkey, 17.6 million; Iran, 15 million; Saudi Arabia, 4.5 million; Iraq, 4.2 million; Syria, 3.6 million; Yemen, 1.6 million; Palestine, 1.3 million; Oman, 800,000; Aden Protectorate, 600,000, Trans-Jordan, 300,000; and the rest with about 100,000 or less.

The geographical differentiation according to density, implicit in the foregoing data, is shown particularly in Figure 1, where different degrees of density, that is, differences in the number of people per square kilometer, are distinguished. The darker areas indicate higher and the lighter areas lower density. On the whole, the density becomes lower from west to east and from north to south; it is lower in the south than in the east.

[1] From the Office of Population Research, Princeton University.

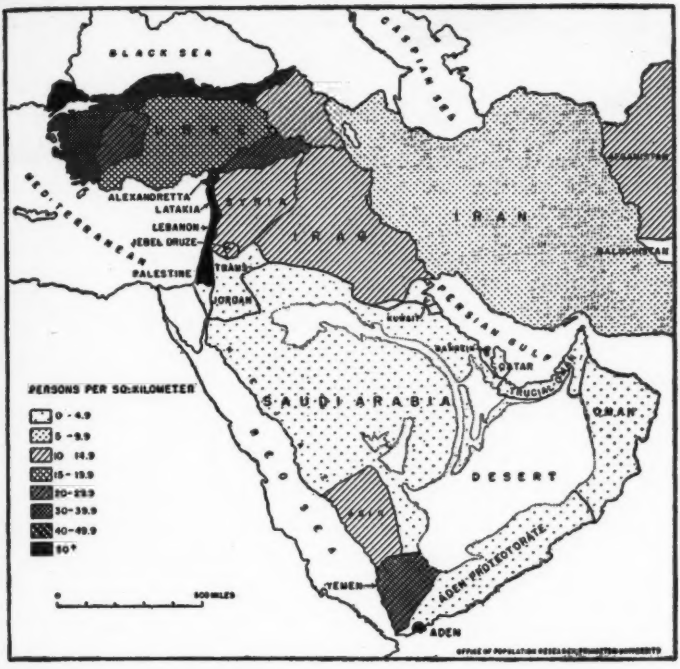


Fig. 1. Density of population.

The average density for the whole area is about 9 persons per square kilometer, but it is evident that an average figure has little meaning in this region where the density shows great variation. The density decreases from about 59 in European Turkey and 30-40 in the provinces of the Aegean, Marmara, and Black Sea Coast, to 20-30 in West Anatolia, 15-20 in Central Anatolia and the Turkish provinces of the Mediterranean Sea Coast, 10-15 in East Anatolia, Syria, and Iraq, around 9 in Iran, and under 5 in Beersheba in Palestine, Trans-Jordan, Saudi Arabia without Asir, Aden Protectorate, Oman, Trucial Coast, Qatar, and Kuwait.

There are, however, two exceptions from the general rule of a

decrease in density from northwest to southeast. The first, and more significant, is found in Northern Palestine, which in 1931 had a density of 72.3. Around 1935-1938, Lebanon had a density of 101, Latakia 62, Alexandretta 46, and Southeast Anatolia 22. Although density by subdivision can not be plotted for Syria and Iraq, because information on area is not available, the population data show that the main bulk of the Syrian population is settled in the western section of the country and that the settlement of the Iraqian population follows the Euphrates and Tigris rivers in a band between Southeast Anatolia and the Persian Gulf. The second exception from the general direction of geographical density differentiation is found in Southwestern Arabia — in Yemen and Asir. Here the coastal highlands cover a larger area than in the rest of Arabia and provide comparatively good climatic conditions and cultivable land. They are in the reach of the monsoon rains and Yemen is also favored by heavy fogs in the spring and early summer. The region can be compared in many respects with the Black Sea Coast in Turkey.

One characteristic to be found in Near Eastern populations, nomadism, is closely related to density and also has significant demographic implications. The number of nomads can be estimated at about 12 per cent of the total population of the region. But there are no nomads in Turkey with the exception of her eastern sections, and none in Alexandretta, Lebanon, and Latakia. There are less than 5 per cent in East and Southeast Anatolia, Northern Palestine, and Ajlam in Trans-Jordan; there are about average or less than average proportions in the Mosul and Bagdad sections of Iraq, Syria, Trucial Coast, and Yemen. On the other hand, there are 15-25 per cent in Iran, Qatar, Oman, Aden Protectorate, and Jebel Druze; and more than 25 per cent in Basra (Iraq), Kuwait, Hasa, Nejd, almost all sections of Trans-Jordan, Hejaz, and Beersheba in Palestine. In Hejaz and Ma'an almost 80 per cent of the total population are nomadic and in Beersheba even 94 per cent.

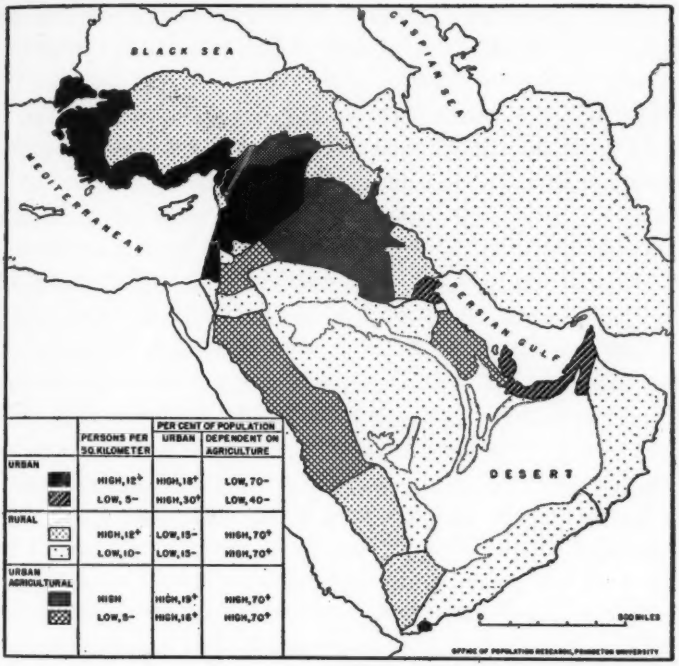


Fig. 2. Population types: urban, rural, and urban-agricultural.

Three population types can be distinguished in the Near East on the basis of the degree of urbanization and dependency on agriculture. They can be called urban, urban-agricultural, and rural. The first type comprises all countries in which less than 70 per cent of the total population are dependent on agriculture. In all of these countries the proportions of the population living in cities of 10,000 and more inhabitants are larger than the average for the region as a whole. In the entire area the city population amounts to about 16 per cent of the total. The urban-agricultural type includes all regions in which agricultural dependency is higher than 70 per cent but in which the city population exceeds the average. The rural type,

finally, is represented by countries with an agricultural dependency higher than 70 and with smaller proportions of city population than the average.

The geographical distribution of these three types is shown in Figure 2, where each of the three types is distinguished as between high and low population densities. The urban type can be mainly identified with the Mediterranean population of the region. It is also found on the Persian Gulf, especially in those sections where pearl fishing is an important occupation, and oil production is developing. The urban-agricultural type is found where areas of low density border areas of high density and where central Arabia finds its direct outlets to the sea. In this type the distinction between urban and rural modes of life is not so sharp as in the first type. Cities are less urban and more rural than in the former case and show up on the map as the urbanized sections of the low-density area, which is at the same time the area of nomadism.

The Determinants of Growth

Types of Data Available. Very little is known about the determinants of growth of the Near Eastern populations: that is, their birth and death rates and their natural increase. Reliable birth and death registration has existed for the settled population by religious groups in Palestine since 1926. Fairly reliable death registration exists for twenty-two cities in Turkey. Births and deaths are recorded in three cities of Iraq; since the data for deaths are pretty reliable these are especially helpful in estimating the type of death rate in Iraq. The registered births and deaths in Trans-Jordan place the vital rates of the population sector to which they relate in a range of high natural increase.

Under these circumstances birth and death rates had to be estimated by using all available information on the population structure. Census data that could be used or corrected for use give age

distributions for fifty-seven provinces in Turkey (1935), and the distribution of children under 13 and adults over 13 is given by sex in two good samples[2] for various population types of low-density areas, that is for urban, settled agricultural, semi-nomadic, and pacified nomadic groups. Sex distribution is given for the Turkish population, for Iraq, and for the population types in low-density areas, besides that for Palestine.

In principle, birth rates and death rates were obtained by utilizing all existing information concerning the relation of age-sex composition and the degree of urbanization of the population to components of their vital rates. Much of the material was built up in stages, so that estimated rates were in turn used in the estimation of additional rates. The whole was checked for agreement with such observed values as were available and for internal consistency at each stage. In building up the various stages of estimated vital rates, the principal method used was that of fitting regression lines on data available. For example, regression lines were fitted to fertility rates and death rates on the one hand and proportions of different age groups on the other. Basic data for the regression lines were secured from European, Asiatic, and African experience.

It would require a long paper of its own to give full explanation and evaluation of the whole procedure.[3] It was carried through as

[2] District of Gishn and Beersheba.

[3] Birth rates were computed for Turkey and her subsections from fertility rates estimated from the proportions of children under 1 and 2-4 per females in childbearing ages. Death rates were computed from age specific death rates estimated from fertility rates, estimated infant mortality rates, and age specific death rates for females. The level of death rates was checked against the recorded death rates for twenty-two cities in comparison with estimated birth rates for cities, and the natural increase was checked against the growth of the corrected populations from 1927 to 1935.

Birth rates for the various population types of low-density areas were computed from fertility rates estimated from proportions between children and women; death rates for the same types were estimated from proportions between children and adults. Birth and death rates for the countries of low-density areas were estimated from the birth and death rates of the various population types weighted according to the composition of the total populations. For the birth rates for Trans-Jordan geographical interpolation was necessary.

Birth rates for the settled population in Iraq were estimated from the sex ratios and the degree of urbanization. Death rates were estimated from birth rates and checked against the recorded death rates for the three cities.

(Continued on page 306)

carefully as possible. However, it should always be kept in mind that the estimations of birth and death rates are based on generalizations of a wide experience, that the estimates do not represent real vital rates, but are vital rates that agree in a general way, and in some cases more closely than in others, with proportions between various elements of the population structure and the relative size of elements of the population structure. Yet vital rates of this nature are the only basic tools that can be made available for forming some conception of the prospects for growth in populations for which no births and deaths are reliably recorded and for which no reliable total population figures for several consecutive census dates are available.

Critique of General Validity of Estimated Birth Rates. The birth rates obtained for the Near Eastern countries range from 27 for European Turkey and 37 for the Aegean Sea Coast area to between 60 and 70 in the low-density area of Arabia. The death rates range from 14 and 22 to 45 and can be assumed to be over 50 where the proportions of unpacified nomads are high. These are high rates, especially as far as the birth rates are concerned. Can they stand the challenge of criticism?

It has been noted that fertility rates for the Turkish provinces and for the various population types in the low-density areas were estimated by the application of child-woman ratios to a regression of such ratios on general fertility rates obtained from the experience of many areas. Had the child-woman ratios been used directly as indices of fertility, the differences in fertility would have been minimized because such ratios neglect infant and child mortality, which varies directly with fertility. Use of the regression permits the effect of this positive association to be reflected in the estimated general

Finally, birth rates and death rates for Syria and birth rates for Iran were obtained through geographic interpolation having regard to the degree of urbanization, and in the case of Syria to the religious composition of the population. The birth rates for parts of Syria were appraised in the light of the natural increase indicated in registration data. Death rates for Iran were estimated from birth rates. The natural increase for Syria was checked against the change of the total population.

fertility rate. That this procedure is justified in the case of Turkey is supported by the experience for twenty-two cities. Such direct evidence is not available for the low-density areas. But it is very unlikely that the infant and child death rates in such areas are higher than those implicit in the general regression lines for fertility rates and ratios of children to women. There is no reason to assume that they are higher than in the backward areas of Turkey. But what is more important is that in those areas where infant mortality rates are especially high, such as the regions of Central Africa and the Guinea Coast, no such high ratios of children to women are observed as in the backward Moslem populations of the Near East. In the first place fewer children are born and more young children die off. Where many children are found, the probability is high that the general health conditions are not exceptionally bad.

On the other hand, it is equally unlikely that the infant and child death rates in backward Moslem populations are essentially lower than those implicit in the general regression lines. The population group in which this really happens is that of the Moslems in Palestine. But they enjoy exceptionally good health services. Besides that, the fertility rates estimated for them from the general regression lines are not very much lower than the observed ones, so that the birth rates for the population types of low-density areas still would approach 60 per 1,000 inhabitants even if health conditions were exceptionally good.

The question arises as to whether the ratios of children to women in the two sample populations of low-density areas can be regarded as typical for backward Moslem populations. That they are probably typical is again supported by experience in Africa, where we find at least majorities of backward Moslem populations in Somaliland, sections of Kenya, Anglo-Egyptian Sudan, French Niger, French Sudan, and French Mauritania. Birth rates of at least 54 and 59 can be directly traced in the cities of Berbera and Hargeisa in British Somaliland. The ratios of children to 100 women in pre-

ponderantly non-Moslem and preponderantly Moslem populations compare as follows:

Area	*Preponderantly Non-Moslem Population*	*Area*	*Preponderantly Moslem Population*
Kenya	127 (children under 15)	Kenya	160 (children under 13)
Northern Uganda	Below 100 (children under 18)	Anglo-Egyptian Sudan	144 (children under 14)
Northern Nigeria	105 (children under 15)	French Niger	121 (children under 15)
Ivory-Coast	79 (children under 10)		
Mauritania, Senegal Section	73 (children under 10)	Mauritania, Sudan Section	107 (children under 10)

More direct evidence on the high fertility of the population of Arabia can be found in the ratios of children to women among Arab migrants outside the Near East — in the East Indies, in Uganda, Tanganyika, and Basutoland. For these groups fairly reliable records on age distributions are available, and among them high fertility rates are found. The ratios of children to women among these Arab migrants are as high as in the sample populations studied, where they range from 160 to 200 for children under 13 per 100 women 13 and over.

Pattern of Fertility and Natural Increase in the Near East. Turning back to the Near East and considering the sociological and geographical differentiation of the estimated birth rates, we find the low birth rates — and in the Near East we consider as low those rates below 50 — in European Turkey, the provinces of the Aegean and Mediterranean Sea Coast, West Anatolia, Latakia, Lebanon, Palestine without Beersheba, and very likely in Kuwait. That means we find them mainly in the urban type of high-density areas. Urban-rural differentiation, however, can also be traced as far as the urban-

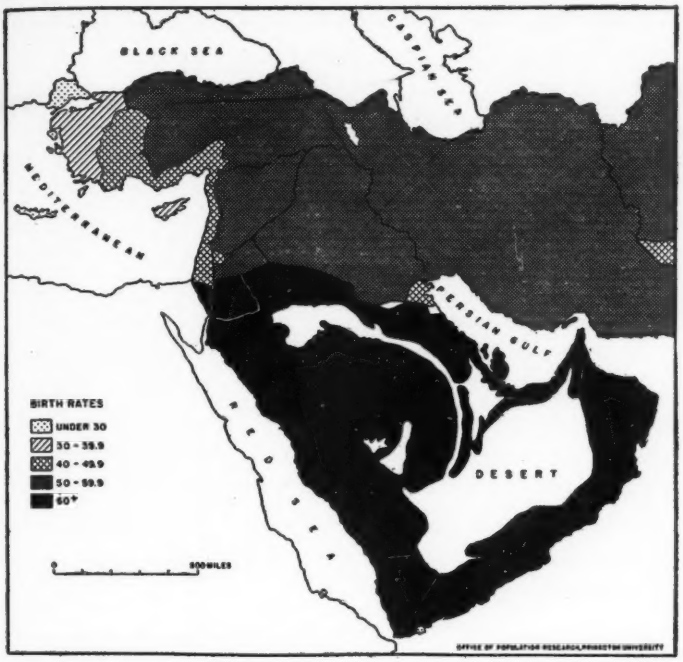


Fig. 3. Estimated birth rates by country, circa 1935.

agricultural type is concerned. Estimated birth rates of 55 per 1,000 population for Southeast Anatolia, 52 for the Bagdad region of Iraq, and 51 for Belqa in Trans-Jordan are lower than birth rates of around 60 estimated for the eastern Black Sea provinces and East Anatolia, and 58-59 for Mosul and Basra. In particular they are lower than the birth rates of the rural types of low-density areas, which have been estimated at over 60.

Also of significance is the geographical pattern of the birth rates. This is shown in Figure 3, where the shading becomes darker with increasing birth rates. There is again an apparent west-east and north-south direction. Within the high-rate areas the estimated rates are from west to east: around 50 per 1,000 population in the western

provinces of the Black Sea Coast and Central Anatolia, 54 in Southeast Anatolia, 55 in the State of Syria and in Iraq, and 53-58 in Iran.

Considering the general level of birth rates in the Near East, it is not surprising that the natural increase is high everywhere in years of normal health conditions such as those to which the general relationships of data expressed in the regression lines refer. The natural increase is between 12 and 17 per 1,000 population in most of the regions. In Palestine, however, it was 25 in 1931, owing to exceptional health conditions created by strong European influences, and it must have been around 18 or 19 in Syria, Latakia, and Lebanon. It is probably over 17 in the settled and pacified nomadic populations of low-density areas and hence especially in Beersheba and the Arabian Sea Coast region from Yemen to Qatar. On the other hand a natural increase of only about 12 has been computed for the Turkish provinces of the Mediterranean Sea Coast region. It is probably lower than 12 in sections of Trans-Jordan and in Hejaz, where the number of nomads in proportion to the population is very high.

The Prospects for Growth

Generally speaking, the potentialities of population growth are higher in countries with high vital rates than in countries with low vital rates. High birth rates provide a larger and longer chance for future high natural increase than do low birth rates. The real future growth, however, depends on the eventual actual development of the natural increase rates. Thus the prospects for population growth are in fact the prospects for the size of the future natural increase rates.

The problem of growth among populations as backward as are those in the areas of low density is further complicated by the fact that growth over a period is not identical with natural increase in years of normal health conditions, even if migration is ignored. These backward populations have to pay an additional toll to epidemics. Hence, their actual growth is probably lower than the

natural increase rates would indicate. Through better control of epidemics, therefore, they would seem to have a chance of larger increase in the future than at present or in the past. Another factor favoring rapid growth is that the populations in the areas of low density have begun to pacify and settle their nomads. After a period of transition, this process usually results in lower death rates for this sector of the population. But whatever their chances of more rapid increase in the near future may be, all possibilities of population growth are open to them if a long-range view is taken: they have before them the whole cycle of growth that civilized populations have already passed through.

Turkey comprises the major portion of the area of high density with a degree of urbanization about equal to the average for the entire region. For Turkey more specific attempts have been made to appraise the prospects of population growth. The probable future trend of birth rates in Turkey was determined on the basis of past trends in other high birth rate countries. The experiences of such groups as the Moslems and Christians in Palestine and of such countries as European Russia, Bulgaria, Roumania, Yugoslavia, Hungary, Italy, and Lithuania were aggregated to provide an insight into how rapidly birth rates have moved in the past from levels as high as those in Turkey today. By seeing how past trends have behaved, we can determine the way in which Turkey's rates are likely to behave in the future. From a general regression line between birth and death rates the natural increase rates corresponding to different levels of birth rates have been estimated. The projection of the population of 1935 by this means is shown by the dotted line curve of Figure 4. As a check on this projection, a second projection was made on the basis of a symmetrical growth curve, using the population figures of Cuinet for 1890, the official estimates for 1915, and the corrected census figures for 1927 and 1935. It was necessary to overcome the special difficulty created by the fact that population growth was interrupted during the war period 1915 to 1922. Since

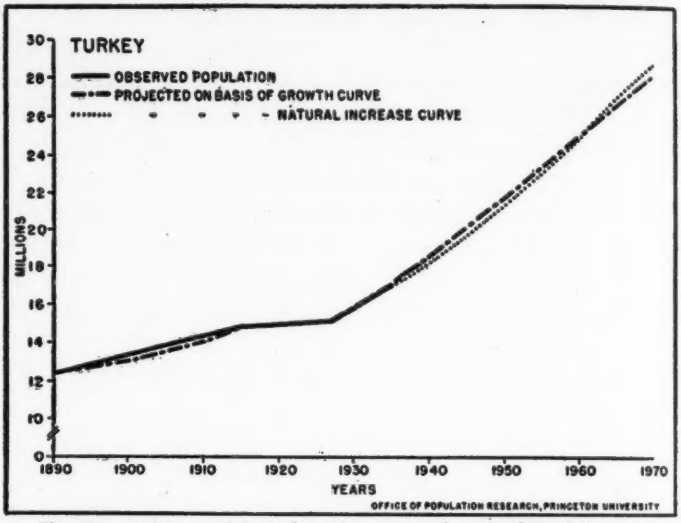


Fig. 4. Population growth in Turkey, 1890-1935, and projected population, 1935-1970.

there are strong indications that the trend of growth before 1915 was resumed after the war, the original growth curve was fitted so that the growth rate 1927 to 1935 represents the uninterrupted continuation of the growth rate from 1890 to 1915. By using the growth rates of this curve beyond 1935, a projection of the 1935 population was made. The result is shown in the second curve of the graph. On the whole, it agrees with the other curve, although it might be said that it represents more the over-all trend than the subcycles of the growing population.

If the projections are at all indicative of the probable future population growth, the population of Turkey in 1970 would be about 70 per cent larger than it was in 1935. Two reservations, however, have to be made. As far as the projection on the basis of natural increase is concerned, it is not certain that the decline of the birth rate will actually assume the same speed as has been experienced by backward populations of Europe. If it should be faster, then the

curve will become shorter and lower. On the other hand, no age-specific fertility and death rates were used, and no allowance was made as to future age composition. The population in 1940, even after correction of the census figures, was probably somewhat lower than could have been expected on the basis of the natural increase curve, owing to a deficit of women in early childbearing ages. This loss, however, is likely to be counterbalanced in a later period when the death rates may be comparatively low because of small numbers, particularly of men, in older age groups.

The prospects of population growth in Iran and Iraq are somewhat different from those in Turkey. Their position is between that of the areas of low density and that of Turkey. They actually have begun to improve their health conditions, and especially in Iraq a vast program of settlement of nomads is under way. They will not grow so fast as Turkey in the near future. On the assumption, however, that they continue the process of modernization, they will soon enter the growth cycle that Turkey is now experiencing.

Another type of population growth is represented by Palestine, a country of high urbanization and density. The two religious groups, Moslems and Christians, are considered separately. The Moslems, like the Christians, have extraordinarily low death rates without having modernized their ways of life to the degree that would correspond to such low death rates. They, therefore, still have relatively high birth rates. Rita Hinden has projected the future size of the Moslem population on the assumption that the true rate of natural increase in 1931 would prevail. Her projection, as presented in Figure 5, results in a population of 1.8 million in 1970 as against about 760 thousand in 1931 and 826 thousand in 1935. A projection, based on an asymmetrical growth curve and fitted to the real population figures between 1933 and 1940, results, however, in a somewhat different conception of the future population. It is represented by the second curve for the Palestine Moslems in Figure 5. According to this projection the Moslems are entering a period of

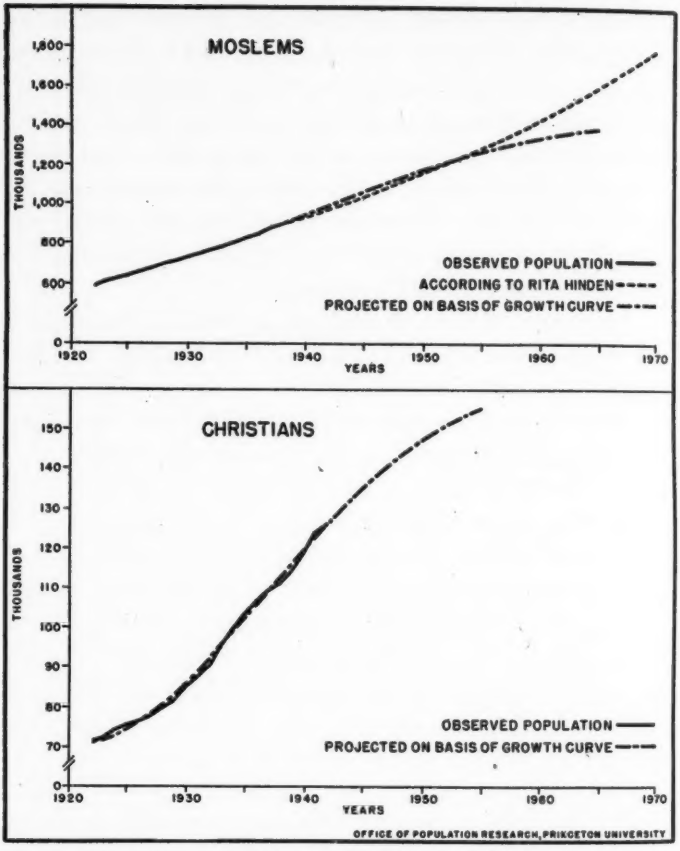


Fig. 5. Population growth of Moslems and Christians in Palestine, 1922-1942, and projected populations after 1942.

decreasing natural increase rates, and their population in 1970 will hardly exceed 1.4 million, in contrast to 826 thousand in 1935. That, however, would still be an increase of about 70 per cent in thirty-five years. Moreover, it has become evident by now that the birth rates of the settled Moslems are decreasing. They averaged 53.5 per 1,000 population in 1926-1930 and 48.3 in 1940-1941. The question is

whether the death rate will continue to decline in the future as it has in the past. Such a continued decline is doubtful. Whereas the birth rate in 1931 was almost as high as the estimated birth rate in Southeast Anatolia in 1935, the crude death rate was between the estimated death rates for West Anatolia and those for the provinces of the Aegean Sea Coast. The death rate of infants, however, was still significantly lower than in the Aegean Sea Coast provinces, 170 as compared with 184. This is a relatively low death rate in view of the current height of the birth rate. The death rate is not likely to drop rapidly unless the birth rate also declines. In fact, because birth rates are relatively high and infant death rates are relatively low, it is possible that modernization will bring a more rapid decline in the birth than in the death rate. Under such circumstances natural increase would be reduced somewhat.

A growth curve has also been fitted to the actual population figures 1922 to 1942 for the Christians in Palestine. (*See* Figure 5.) This curve, as well as a birth rate of 36 and a death rate of 15 per 1,000 inhabitants in 1931-1935, indicates that the Christians in Palestine definitely have entered a period of decreasing natural increase rates. The number of Christians amounted to 71 thousand in 1922, 76 thousand in 1926, 103 thousand in 1935, and probably will never exceed 165 thousand.

Some inferences regarding the prospects of growth for the populations of Lebanon and Latakia can be made from the estimates of their own vital rates, implying high natural increase, and the growth curve for the Christians in Palestine. Their vital rates would place them at the beginning of the steep sector of the growth curve for the Christians. But it is doubtful that their growth will be so pronounced as was that of the Christians in Palestine.

The present analysis of the demographic position of the countries of the Near East and of the prospects for growth involved in this position leads to the over-all conclusion that the Near East belongs to the areas of the world in which future population growth may be

expected to be very high. Are the resources in the countries of the Near East sufficient to meet this situation? This is certainly the case as far as Turkey, Iran, and Iraq are concerned. There is a wide scope for increasing agricultural productivity on the land already under cultivation and there are sufficient reserves of land which can be made cultivable. In Iraq and Iran this largely means reconstruction in modern form of irrigation systems that already existed in ancient times and the removal of the too high alkali contents of the soil. But there are also mineral resources in these countries. Turkey has coal, copper, lead, manganese, and magnesium and is one of the countries richest in chrome. Minerals, in addition to industrial plants, provide the basis for industrialization, which is already under way. Iran has oil, gold, silver, copper, tin, zinc, mercury, nickel, iron, antimony, and manganese, and Iraq has mainly oil and salt and some gold, lead, copper, platinum, and zinc. Both countries produce and can increasingly produce agricultural raw materials for industrial production. Lowdermilk in his recent book on Palestine[4] has shown that there are large possibilities for the expansion of the cultivable land in this country also. Full utilization of the Jordan Valley Depression will provide the power needed in an advanced economy, and larger extraction of important minerals from the Dead Sea waters will make larger chemical production possible. Palestine has a favorable location between the European producer of production goods and the African and Asiatic producer of raw materials and thus may become the manufacturer of consumption goods for and from the Near East. It is difficult to appraise the economic possibilities in Arabia. Yemen certainly can become an important agricultural producer. There has always been significant emigration from Arabia and it is probable that the other countries of the Near East themselves will be able to accept more immigrants in the future than they have in the past.

[4] Lowdermilk, Walter C.: PALESTINE, LAND OF PROMISE. New York, Harper and Bros., 1944.

Fuller utilization of the natural resources in order to meet the needs of rapidly growing populations will, however, necessitate emancipation from the old ways of life and the change of a medieval and half-medieval into a modern society. The social problems of rapid evolution will be the real problems created by population growth in the Near East.

ANNOTATIONS

THE FUTURE POPULATION OF EUROPE AND THE SOVIET UNION

WHILE this study of Dr. Notestein and the staff of the Office of Population Research[1] is essentially a statistical horoscope of Europe in its demographic aspects, its findings must be carefully considered by the statesmen who are charged with establishing a stable peace; for what can and must be done regarding peace is circumscribed by the findings of this study, together with what is known of demographic trends in other parts of the world.

The methods employed by the authors to determine prospective mortality and fertility trends — methods somewhat unique albeit convincing — are described and evaluated in the first chapter and in the first and second appendices. The population projections themselves, on which most of the textual discussion is founded, are given, by sex and five-year age groups at five-year intervals, for the period 1940-1970, in a separate appendix.

The second chapter is devoted to a review of growth trends in Europe in 1900-1970. The historical demographic pattern of Europe reflects rather closely the historical pattern of the development and spread of those conditions which distinguish the modern industrial and urban parts of the world from these same parts a century ago. The death rate and, subsequently, the birth rate first began to fall in Western Europe where commerce and industry first became dominant. Only as, and somewhat in proportion as, these new conditions spread eastward and southward

[1] Notestein, Frank W.; Taeuber, Irene B.; Kirk, Dudley; Coale, Ansley J.; and Kiser, Louise K.: THE FUTURE POPULATION OF EUROPE AND THE SOVIET UNION: POPULATION PROJECTIONS 1940-1970. League of Nations, Geneva, 1944, 315 pp. $3.50.

in Europe did mortality and, subsequently, natality begin to fall in these latter areas. In consequence, although demographic indices will pass through the same same stages in non-Western Europe as they have already traced in the west, actual rates of growth, by country, will differ markedly in 1940-1970. Generally they will be low at the West, and high at the East and South. Whence, assuming no international migration, the demographic face of Europe will change considerably. Europe, exclusive of Soviet Russia, which numbered 399 millions in 1940 will number only 417 millions in 1970. The population of Northwestern and Central Europe will fall from 234 to 225 millions, while that of Southern and Eastern Europe will increase from 165 to 192 millions. Meanwhile the population of the U.S.S.R. will increase from 174 to 251 millions. Furthermore, while the populations of Soviet Russia and the countries of Southern and Eastern Europe will, in most instances, still be growing, the populations of the countries of Northwestern and Central Europe will have declined below their peaks. The Slavic element will have outdistanced both the Latin and the Teutonic elements.

These population projections do not take into account war losses. Careful analysis of the demographic effects of World War I indicate, however, that the present war is not likely to modify underlying trends; and that while it will shift the path of actual population growth somewhat, it will not change it significantly.

Chapters IV and V have to do with the coming changes in age structure, and with the effects of the change in age structure (together with the change in population totals) upon the number, character, and distribution of productive manpower. Future demographic military potentials are also considered. As of 1970 the German military manpower potential will approximately equal that of the United Kingdom and France combined; that of the U.S.S.R. will approximately equal that of the next eight most populous countries of Europe combined. In part as a consequence of these trends, E. M. Earle recently concluded that "it is even probable that before the twentieth century has run its course, the Soviet Union will be the most powerful nation in the world."[8]

Had it not been for the present war, the relative number of females would have decreased by 1970. Actually "at the end of the present conflict the relative surplus of women in Europe may be the greatest in the

[8] Earle, Edward M. (Ed.): MAKERS OF MODERN STRATEGY. Princeton University Press, 1943, p. 364.

history of the continent." This surplus, it is pointed out, "will tend to depress fertility and encourage the gainful employment of women"; it may facilitate the development of values unfavorable to home and children, and so make more difficult reconciliation of the economic and maternal functions of women.

Total dependency ratios — dependents to persons of productive age — will decline everywhere but in Northwestern and Central Europe; here they will decline until about 1960, and then move upward gradually. Specifically, the number of children under 15 will decline in greater measure than the number 65 and over will increase throughout all or most of the period under study.

In the closing chapter two of the problems that grow out of the main future demographic trends, the development of population pressure in Eastern Europe and the growing threat of population decline in Western Europe are considered. Eastern Europe is already overpopulated in relation to its developed resources. Something like one third of its agricultural population could be withdrawn without reducing total agricultural production. Should these be withdrawn, and should the future working population in this agrarian area increase by another 20 millions, a very considerable population must either be provided with jobs in industry, or with outlets to areas willing to accept immigrants. While industrialization is the preferable solution, adequate industrialization may not prove easy of accomplishment; whence some recourse to emigration may be necessary. More detailed economic analysis than is offered appears necessary. However, Dr. Notestein and his coworkers have under way further studies of this problem area. Russia can accommodate her prospective growth.

In the analysis of the problems of countries facing an eventual decline in numbers, it is indicated that reduction of mortality is no solution; it is necessary to create a social situation in which parents will choose, in view of their own and their children's interest, to have families adequate to maintain the population. It is important, however, that pro-natalist measures not accentuate the values initially responsible for the decline in fertility. The authors doubt that a volume of migration from East to West sufficient to equalize growth rates in both areas is practicable.

Population students and statesmen will await eagerly the further volumes promised in the series of which this valuable volume is the first.

JOSEPH J. SPENGLER

POPULATION PROBLEMS: A CULTURAL INTERPRETATION[1]

THE field of population study has generally had the character of an interstitial science to which biologists, economists, and sociologists have all made important contributions. But for purposes of instruction in colleges and universities the field has usually been considered a branch of sociology. In his new book on POPULATION PROBLEMS: A CULTURAL INTERPRETATION Landis has attempted to provide a textbook with a sociological orientation consonant with the fact that most population courses are taught by sociologists.

Landis has attained his objective. He adequately demonstrates the decisive importance of socio-cultural factors in determining reproductive behavior, the incidence of mortality, and migration, which collectively determine the size and composition of the population. Though Landis perhaps over-emphasizes the novelty and distinctiveness of his approach it is a highly useful one for the interpretation of population phenomena to the layman.

The influence of the approach is reflected in the organization of the book. The first section, "Population Facts and Population Theories," is a short one, in which "naturalistic" and philosophical theories of population are summarily disposed of. Part 2, "Cultural Forces in Vital Processes," is much the longest. Four chapters are devoted to aspects and causes of differential fertility, and there is a good discussion of cultural norms as determinants of reproductive behavior. Part 3, "Sex, Age, and Ethnic Composition," is a briefer and more conventional treatment of the biological elements in population structure. Part 4, "Socio-cultural Factors in the Distribution of Population," is concerned with both geographical distribution and distribution of the population by functional roles. Part 5, "Problems of Migration," is followed by a concluding chapter on "A Population Policy for the United States." In the latter, Landis outlines the cultural forces likely to stimulate a positive population policy in this country and correctly points out that any attempt to increase numbers must focus on the birth rate. He wisely observes that "Economic incentives probably will prove inadequate for raising the birth rate" and feels that "Modification of the birth rate in an upward direction will be dependent upon a remotivation of the American people and a revolution

[1] Landis, Paul H.: POPULATION PROBLEMS: A CULTURAL INTERPRETATION. New York, American Book Company, 1943. 500 pp. $3.75.

in social organization as well." He advocates a population policy closely modeled after the Swedish program with its emphasis on broad humanitarian objectives.

The text is notable for the completeness of its references and citations. It is obvious that the author has made diligent use of current materials. However, in reading the book the reviewer was drawn to reflections on the unfortunate influence of systematic note-taking, as originally dictated by graduate work and thesis writing, upon the quality of scientific and textbook English in the United States. Much of Landis's book consists of digests of secondary sources loosely strung together in more or less logical sequence. There is much repetition both of language and of ideas. A single example may suffice to illustrate a common failing of the book:

> "The female holds to life more tenaciously than the male." (p. 214)
> "—the female clings to life somewhat more tenaciously than the male." (p. 252)
> "Females hold on to life somewhat more tenaciously." (p. 274)

Despite the evidence of wide reading, there are several serious lacunae in the subject matter covered. Though nominally a book on population problems, it almost completely ignores the two most significant demographic problems to be faced in the modern world. Thus, first, the problem of overpopulation and population pressure is the object of only casual reference despite its enormous importance for the future welfare of the world. Certainly no longstanding resolution of the world's political dilemma can be found without some solution of the problem of population pressure in the Orient. Landis contributes nothing to an understanding either of the situation or its implications. In this and other ways the author displays an anachronistic absorption with purely American problems that is highly inappropriate in a world in which American well-being will be shaped as much by population trends outside as by those inside her boundaries. Even had the book been given the more appropriate title of "American Population Problems" it would still suffer from the defect of having no systematic treatment of the relationship between population and resources.

A more excusable omission is the absence of any organized discussion of the economic and social implications of a declining population. The problems of a stationary or declining population are speculative, but

obviously of vital importance to this country. In fact, a population policy without reference to these problems is meaningless. Though Landis might understandably have chosen not to venture an original contribution on the implications of a declining population, the value of his book would have been greatly enhanced by a critical summary of the exploratory work in this field carried on by Reddaway, Myrdal, Thompson, and others.

Despite these and other omissions (as for instance the neglect of the demographic effects of war except as regards the sex ratio) the book may serve a useful purpose in an expanding field. It is plentifully illustrated with effective graphic materials, which, combined with a relatively simple and straight-forward style, should make a somewhat technical subject readily intelligible to beginners in the field.

DUDLEY KIRK

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COSTS OF DENTAL CARE[1]

IT HAS been well known for a long time that the prevalence of neglected dental disorders is very high. The extent and seriousness of the problem has been further emphasized recently by reports on physical examinations of young men for military service which indicate that defective or missing teeth were the greatest single cause of rejections. Many persons in public health and the dental profession realize the importance of better dental care for the health of the population and various plans for financing dental care, as well as medical care, have been under discussion. There are several distinctive features about dental care as compared with medical care which affect the cost of essential dental service; specifically, everyone should receive prophylaxis and diagnostic care regularly, tooth decay does not heal spontaneously, and the volume of service required for the accumulated dental defects is enormous. In order to obtain actual data on the cost of providing needed dental care, a study of complete service to a group of adults was sponsored by the American College of Dentists. The report on this study furnishes valuable information on the costs of

[1] Costs of Dental Care for Adults Under Specific Clinical Conditions, by Dorothy Fahs Beck, assisted by Mary Frost Jessup. Socio-Economics Committee, American College of Dentists, 4952 Maryland Avenue, St. Louis, Missouri.

providing for the dental needs of the population and on the time of dentists and other professional workers which would be required.

The report presents a thorough and detailed analysis of dental services to 485 patients 16 years or older who attended a nonprofit pay clinic in New York City, the Dental Health Service. A unique feature of the study is the separation of "initial care" or services for dental rehabilitation after first visit to the clinic and "maintenance care" or dental services during several years following initial care. In order to study both types of care for the same patients, records analyzed are for those who visited the clinic at least once during each calendar year for four or five out of five consecutive years following completion of initial care, who completed during the initial period and during the maintenance period all fillings and extractions recommended and sufficient prosthetic work for reasonable mastication, and who received all dental work during the period studied at the clinic or from specialists on referral by the clinic. The 485 cases which met these qualifications and were complete as to cost and time data were 2.2 per cent of the different patients who attended the clinic from 1926 to 1938. Patients were accepted on the basis of low income and most of them were from the white-collar group.

At regular clinic fees, the initial care received cost an average of $52.66, of which $23.78 was for prosthetic work; $19.37 for fillings; $3.20 for extractions; $2.50 for x-rays; $3.81 for prophylaxes and miscellaneous services. If patients had had all prophylaxes and x-rays recommended during the initial period, the average total bill for essential initial care would have been $55.23. In terms of the actual cost to the clinic to furnish all recommended services, the estimated average cost was $48.65 per patient. At typical, low, urban, private fees, the estimated charge for services recommended would have been $71.34.

For an average maintenance year, clinic fees for services received amounted to $10.05, of which $4.80 was for fillings; $2.76 for prosthetic work; 20 cents for extractions; 49 cents for x-rays; and $1.80 for prophylaxes and miscellaneous services. If all patients had had the recommended annual prophylaxis and a full mouth x-ray biannually, annual maintenance charges would have averaged $13.26. Cost to the clinic for the recommended maintenance care was estimated at $13.87 per patient per year. At low, urban, private fees, charges for recommended services would be $16.05.

At the fees charged by the clinic, "only x-rays and initial prosthetic

work (dentures) yielded net hourly returns in excess of cost to clinic to provide them." Dental examinations, miscellaneous treatments, and extractions were provided at a loss, and prophylaxes and fillings were done at about cost. Part-time dentists employed at the clinic received hourly pay somewhat above average figures for net income of dentists in New York City in 1937; and technicians, who did all prophylaxes and x-rays, were on prevailing full-time salaries. Since the fees charged were in line with low fees charged by private dentists, it is suggested that dentists are depending too largely on dentures and x-ray service for income.

Detailed tabulations give the number of specific services received and the "chair time" required for these services. Therefore, data are available to make estimates of potential costs on any desired basis for different groups. There is a discussion of differences in dental needs according to sex and age among these patients and of other factors to be considered in making predictions of costs or services for specific populations. Findings of other studies on dental needs and costs are reviewed.

Present number of dentists and hygienists could supply only a small fraction of the volume of service required by the total adult population. If all dentists in active practice devoted themselves exclusively to initial care, it is estimated that they could provide it for less than 20,000,000 adults per year. Maintenance care alone could not be provided for all the population by dentists now in practice, even if all prophylaxes, x-ray pictures, and laboratory work were delegated to auxiliary workers. But the demand for dental care indicates that most of the population receive only emergency services. In the Consumer Purchase Study by the Bureau of Labor Statistics, it was found that the average annual expenditure per capita for dental care equalled or exceeded $13.87 for white families with annual incomes between $5,000 and $7,499 in about two-thirds of the cities studied, and with incomes of $7,500 or more in all the sample cities. In villages and rural areas, expenditures by families with incomes between $5,000 and $10,000 fell considerably below the $13.87 average maintenance cost. Attitudes and habits concerning dental care will have to undergo considerable change before those economically able to purchase adequate care create an effective demand for more dental service, especially prophylaxis and preventive care.

The discussion of costs, methods, and other problems involved in the extension of dental care to moderate and low-income families merits

careful reading by all persons interested in better dental health for the general population. For the dentally indigent and marginal income families who cannot budget for dental care, government subsidy seems necessary. The estimated cost of adequate dental care for these families is very large, in fact, somewhat staggering, but the authors believe that it is subject to gradual attainment. For that part of the population which is able to pay, the applicability of the insurance principle to dental care is considered and the authors conclude that "insurance cannot be a solution of the initial costs problem" since initial care needs are present and can be determined at any time by examination. They believe that the insurance principle does offer a sound method for spreading the cost of maintenance care since individual costs vary considerably among individuals and from year to year, and "the care needed by any individual cannot be predicted accurately." Actual experience with providing maintenance care to insured persons is needed to answer certain questions. Would annual payments induce the subscribing members to have all needed prophylaxes and other care? If not, what would be the cumulative effect on average costs of failures to receive examinations regularly, and early treatment for dental conditions? If regular care is received, annual maintenance costs over a long period may be more, or less, than the average costs for a four-year period following dental rehabilitation. The authors are aware of these problems and of the need for continuing research. It is emphasized that public education, more research, and experimental efforts in the coordinated use of all available methods to meet costs will be required for a solution of the dental problem.

DOROTHY G. WIEHL

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ILLNESS FROM CANCER IN THE UNITED STATES[1]

IN THE past few decades, cancer mortality has increased and cancer has advanced to second place as a cause of death. Consequently, the interest in this illness has become widespread. Harold F. Dorn of the United States Public Health Service has published a series of papers which describe a survey on illness from cancer and discuss age, sex, racial, and regional differences in the illness rates from the disease.

[1] Dorn, Harold F.: Illness from Cancer in the United States. *Public Health Reports*, January 14, 21, 28, 1944, 59, Nos. 2, 3, and 4.

The number of living persons with cancer at a given time is unknown because it is impossible to get information about cases of undiagnosed cancer. In order to keep the number of persons with undiagnosed cancer as small as possible, Dorn has limited his sample to persons with diagnosed cases of cancer under care of hospitals, clinics, and private physicians in urban areas of the North, South, and West during one study year. Urban areas were selected because they have medical and hospital facilities accessible to all persons. The unknown cases of cancer would tend to be less in urban than in rural areas.

The author found that the majority of the diagnoses in all regions were microscopically confirmed. There were disagreements in diagnosis as to the primary site of the neoplasm in about one-fourth of the cases reported by two or more doctors or hospitals. When a comparison was made of the primary site as reported by case records and death certificates, the disagreements were greatest for diagnoses of brain cancer. Almost half of these deaths were diagnosed as due to nonmalignant causes.

Three different illness rates were used in the discussion: the incidence rate which includes only cases first diagnosed during the study year, the prevalence rate which includes cases treated or diagnosed during the year, and the total case rate which includes cases treated, cases diagnosed during the year, and those previously treated but during the study under observation only.

When these rates were determined for the sample studied, Dorn found that out of every 100,000 white persons living in cities in the United States, there are about 380 patients with cancer and 50 patients under observation because of a treated cancer. Among this same population, there are about 230 new cases of cancer diagnosed during a year.

The three different illness rates for the colored population were less than those of the white population. There was considerable difference between white and Negro males; with the exception of incidence, the illness rates of the Negro males were about half as great as those of the white males. The ratios of the rates among white to that among Negro males were 1.72, 1.86, and 1.98 for incidence, prevalence, and for all illness, respectively. When cases of skin cancer, which is relatively rare among Negroes, were excluded, the difference became smaller but was nevertheless large. The illness rates for white females were only from 13 to 21 per cent higher than those of the Negro females.

The illness rates from cancer increase very rapidly with age during

adult life. The rate of increase is less for Negroes than for whites. Although the sickness rate was higher for males than for females for all ages in both white and colored populations, the male rates were higher during childhood and early youth and in old age. This may have been due to the relatively large number of cancers developing in the female genital organs in the middle years of life.

The most frequent primary sites of cancer are the genital system among white females and the digestive system among white males. Fifty-one per cent of all white females with cancer had cancer of the genital system, including the breast, and 36 per cent of all white men with cancer had cancer of the digestive system. Except for cancer of the genital system, the male rate was higher than the female rate for cancer in broad groups of primary sites; namely, digestive system, skin, buccal cavity, urinary system, and respiratory system. With one exception, these same sex differences in the primary site of the cancer applied to the colored population. Among Negroes, there was almost no difference between males and females in the rate for cancer of the skin.

The only form of cancer which developed as frequently among colored as among white persons was cancer of the genital system. However, among white and colored females, the illness rates for cancer of the specific genital organs were different. Cancer of the uterus occurred more frequently among colored than among white females. Cancer of the other genital organs, including the breast, was more frequent among white females.

Prevalence rates of cancer rise rapidly with increasing age. This does not mean that children and young people are entirely free from the disease. Cancers of the brain, bone, urinary system, and glands formed a large proportion of all the cases of cancer among the young population.

There was wide variation in rates according to primary sites of cancer among white women who were being medically treated. About half of the malignant tumors under treatment were those of the breast and uterus. Next in order of frequency of cancer among white females receiving care were cancer of the skin and the digestive system, intestines, stomach, rectum, and anus. The distribution of primary sites among white males was less varied. First in order of rank of cancer being treated was cancer of the skin, which accounted for 17 per cent of all cases of cancer. Second and third in order were cancer of the stomach and pros-

tate. With the exception of cancer of the prostate, cancer of the genital organs is relatively rare among white males.

The male rates for cancer, other than cancer of the genital organs and of the liver, were higher than the female rates. The illness rates for males rose more rapidly with increasing age than they did for females in the white population. As a result, the difference between the two sexes became greater with age. Not all cancers had a continuous increase in the rate of illness with age. For example, rates for cancer of the brain, kidney, lung, and pancreas showed an abrupt decrease after the age of 65.

More persons in the South developed cancer than those in the West or North. The illness rates in the West were higher than those in the North. The incidence rates among white males were about 50 per cent higher in the South than in the North and about 40 per cent higher among white females. The incidence rates among colored females were also higher in the South, but the rates among colored males were lower. The author has suggested that the lower Negro male rates for cancer may be due to failure to seek medical care. Cancer of the skin occurs more frequently in the South than in other regions and has a more favorable prognosis than other cancers. When cases of skin cancer were excluded, the incidence rates were about equal for white males in the three regions and 10 per cent higher in the South than in the North among white females.

There was no difference between white males and females in the mortality from cancer. The death rate standardized for age was 136 per 100,000. The death rate for Negro females (134 per 100,000) was almost 50 per cent greater than the rate (94) for Negro males. According to Dorn, this difference may result from the failure of many Negro males to receive a diagnosis of illness from cancer and consequently the real cause of death may not be noted. There was less difference in the mortality rates than in the illness rates between the white and colored populations. This may have been due to the more frequent incidence of nonfatal skin cancer among the white than among the colored population.

The death rate from cancer of the genital system was about four times greater for females than for males in the white population. On the other hand, more males than females died from cancer of the buccal cavity, digestive tract, urinary system, respiratory system, skin, and bones.

The death rate from cancer of all sites was highest in the North and lowest in the South for the white population. The urinary system was the

only group of sites for which the death rate from cancer was higher in the South than in the North.

About half of the deaths from cancer among males in the total population were due to cancer of the digestive organs. A similar proportion of cancer deaths among females was attributed to cancer of the genital organs including the breast. The most fatal malignant tumors were those of the digestive tract and respiratory system; 59 and 54 per cent of these patients died within one year after diagnosis. The least fatal was cancer of the skin with a mortality of only 4 per cent.

It has been found that mortality records are an incomplete source of information about the prevalence of cancer, especially of cancer which is relatively nonfatal. There was considerable difference between mortality rates from cancer and illness rates.

This is the first comprehensive investigation of morbidity from cancer in the United States. Because of the importance of cancer as a cause of illness and death, this study is of great value.

ANNE BARANOVSKY